# MYRMECIA

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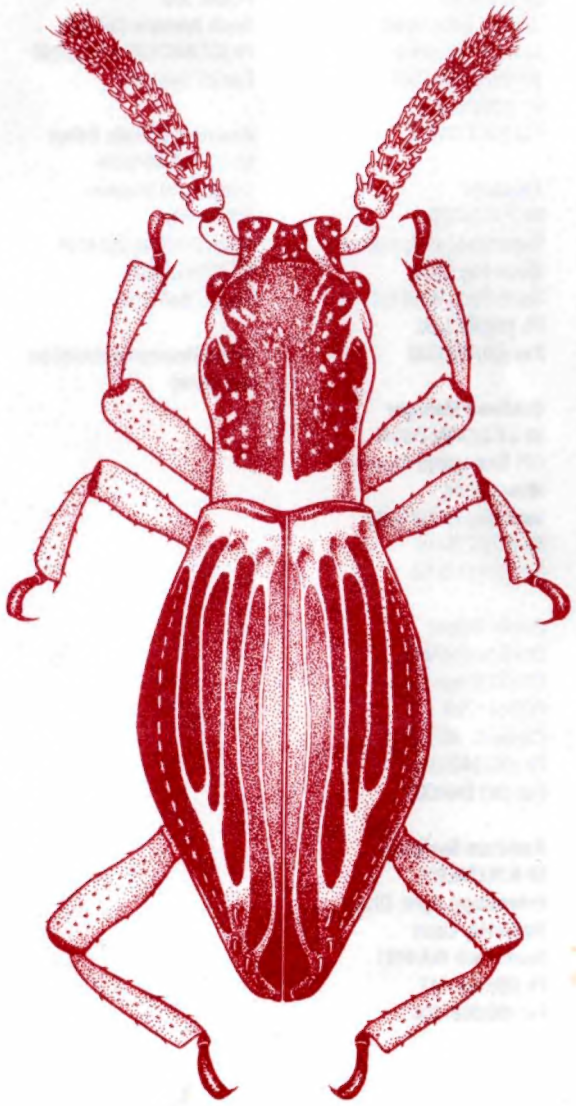

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(Office Bearers continued on rear cover)

**THE COVER**

The cover illustration for this year's "Myrmecia" features an illustration from the forthcoming new edition of "Insects of Australia". The illustration is by Ann Hastings, one of the CSIRO artists who have been working on the numerous new plates for the book. The species shown is *Sarothrias lawrencei* Lobl & Burkhardt, a member of the Jacobsoniidae, a family which appropriately enough had no described species from Australia at the time of the first edition. *Sarothrias lawrencei* is a tiny, rare species from the rain-forests of North Queensland and has distinctive scale-like setae on the antennae and tracts of silvery tomentum on the body.

**NOTICE**

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# MYRMECIA

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**Copy Deadline for Next issue**

Material for publication in the November 1990 issue of ***Myrmecia*** should be in the hands of the Editor at his address on the inside the front cover by **Friday, Oct 19.**

## EDITORIAL

### Rainforest insects: Biodiversity, Bioguesstimation, or just hand-waving?

We've always known there were lots of rainforest insects, but in recent years the use of canopy fogging with insecticides has shown that there are perhaps more than we ever imagined. In rapid succession studies have been published on prodigious canopy knockdowns by entomologists working in Panama, Brazil, Hawaii, Peru, Borneo, Sulawesi and Seram. Terry Erwin, from the Smithsonian, was even tempted to extrapolate his Panama beetle catch into an estimate for the number of world insect species[1]. His astonishing figure of 30 million species far surpassed previous estimates of 3-4 million and has been widely quoted. Using the same reasoning he also figured that one hectare of Panama rainforest (canopy and ground) might support 41,000 arthropod species.

Now rainforest canopy studies have come to Australia. The first large scale Australian figures to go public were from canopy fogging at Lamington just last summer and presented by UNE's Professor Roger Kitching on Robyn William's acclaimed ABC radio programme, "The Science Show" on July 28. In an eloquent and sometimes passionate talk Roger appealed for a return to traditional entomology training to provide expertise to process such canopy collections, and he decried the recent axing of taxonomists from ANIC and the BM. But his talk also had a powerful subtext which derived from tantalising statistics on his canopy fogging near O'Reilly's guesthouse. After uncritically citing Erwin's figure of 30 million species as being conservative, Roger described his own sampling of 9 10mX10m canopy blocks (about 0.1 ha) at Lamington. These yielded 420,000 specimens despite not including sessile canopy species or those from soil, litter or herbaceous layers. He deduced that *'our first estimate of the number of different sorts, again on the most conservative of assumptions, is 100,000 species'*. From these figures Roger derived a message: *'First, our old model of entomology - the systematic and detailed description of species after species, family after family, until they "were most all done" - will not work. Such a paradigm for 3 million was tenable and instructed generations of entomologists, and provided the basic prescription for the science as a whole. But 30 million plus just isn't do-able. If all Australia's scientific resources, pitiable as they are, were diverted to this noble end*

*for 100 years we still wouldn't reach an end.'* From this his conclusion was that precise taxonomy of species, other than economic ones, is a *'mire to be avoided at all costs'* and that what is needed is the capacity to rapidly sort catches into often composite "morphospecies" which can then be assigned to community guilds so that we can *'recognize it* (biodiversity) *when we see it'.*

Now 420,000 specimens from 0.1 ha of canopy is certainly impressive but it accords well with other estimates of 1.19 million (Borneo), 0.32-1.6 million (Brazil) and 12 million (Seram) insects per canopy hectare[3]. But the estimate of 100,000 different canopy-only **species** present in one tract of sub-temperate rainforest is truly astounding. It is more than double Erwin's 41,000 species per hectare estimate for canopy plus ground fauna in tropical Panama, and indeed, is just short of the estimate of 107,000 species for all Australian insects made by taxonomists in 1979[4] and which will be increased a little in the new edition of "Insects of Australia". Roger's estimate includes all arthropods, but the non-insects (arachnids, myriapods, etc) in these sorts of samples really add little to gross species numbers.

We know a little about the patterns of distribution of rainforest arthropods in Australia. From these we can make some crude predictions from Roger's estimate of 100,000 canopy species at one locality (apart from the obvious fact that the unsampled ground fauna must swell this figure considerably higher). We know that the insect fauna changes radically with altitude and floristic composition. For example the insects at O'Reillys (900m; where I've collected often for 28 years) are almost totally different from those in the drier, floristically different rainforest just 20 km away at 150m in the Canungra valley (where I've collected on our family farm for 20 years). At Bellenden Ker in NQ we found that there was only 3.6% overlap of species between the summit at 1500m and the base at 100m[5]. So within the complex Border Ranges region centred on Lamington there must be at least double the species estimated at O'Reillys, say 200,000.

We also know that our island-like pattern of rainforest means that most Australian rainforest insects have limited geographic distribution. For example the aradids of Lamington and Mt Glorious (only 120 km apart) have only 50% species in common. If we travel 1300 km to the Wet Tropics of the Cairns region we find a fauna not only more radically different in composition but vastly richer in species than south Queensland. Within those Wet Tropics there is marked differentiation of the fauna between the numerous mountain massifs, all of which have been topographically discrete for more than 100 million years. Thus the two richest massifs (out of 20 in the Wet Tropics), Bellenden Ker and Carbine Tbld, are only 40 km apart but share only 25% of their aradids and flightless carabids; only 6 out of their 88 species also occur in South Queensland. The Wet Tropics must have, at the very least, double the fauna of the Border Ranges with at most half the south's 200,000 spp in common. Say a combined total for just those two regions of 500,000 species (only 5 times the O'Reillys estimate). Crossing the potent arid barrier north of Cooktown takes us to the Peninsula rainforests, famous for their rich and distinct fauna with many links to NG. Then there are the monsoon rainforests of NT and the Kimberleys, the temperate rainforests of southern NSW, Victoria and Tasmania, the isolated tropical systems of Eungella-Mackay, the distinct subtropical systems of Kroombit Tops, Bulburin and the Bunya Mts, and the extensive and floristically distinct deciduous vine thickets further inland. On this basis, if the Kitching estimate is correct, then total Australian rainforest arthropods must far surpass 1,000,000 (only 10X the O'Reillys canopy estimate), and this excludes the insects of Australia's non-rainforest habitats which comprise more than 97% of our land area.

We also know a little of the proportions of the different insect orders in the overall fauna. The taxonomists' 1979 survey estimated beetles to comprise 31% of Australian insect species; Erwin used 40% in his calculations; beetles were 37% of our Bellenden Ker survey; Stork got 23% beetles in Borneo[3]. Thus of the estimated 100,000 canopy species at O'Reillys we must assume that they include between 20 and 40 thousand kinds of beetles, about the projected estimate by taxonomists for the whole of Australia.

These are prodigious figures which, if correct, not only make current Australian taxonomist's estimates look absurd, but also support to Roger's hyperbolic prediction that Australia's entire science budget for the next 100 years would not accomplish the task of describing the fauna. Isn't the corollary which flows from that prediction: Why even bother to start to fund such futility?

I am a curator/collector constantly processing bulk rainforest collections and this postulated species diversity is not translating itself into actual specimens in collections. Yes, we continue to get species we haven't seen before but not in surprising numbers. If there are 30,000 spp of beetles at O'Reillys why, statistically, don't we get whole suites of extra species every time we make a random collection there? Is there perhaps a giant fauna up in the canopy totally intractable to normal collecting methods? Take the moths, a herbivorous group richly represented in rainforests and which breed mostly in the canopy. If there are 100,000 species at one site then about 20% (20,000) should be moths. Moths can be efficiently attracted from the tree tops to light traps and have been systematically collected across Australia by ANIC in this manner for 40 years. But a careful estimate of the whole Australian fauna, based on those collections, is only 22,000 spp.[5]. If beetles and moths are not represented in the O'Reillys fauna in

those expected proportions then the groups which have taken their place (?Acarina,?Microhymenoptera, ?Nematocera) must have species diversity beyond comprehension.

Nor does this fantastic postulated diversity rest well with the common presumption that Australia's rainforests are much less diverse than those of more equatorial regions. For example Australia has perhaps 250 rainforest butterflies, less than half those from much smaller New Guinea and only one quarter those from even smaller Malay Peninsula. More than 1000 spp. occur at one locality in Peru[12]. Jon Majer has recently shown that our RF canopy ants are much less diverse than those of the Neotropics[11].

Sorting canopy samples takes years and the input from numerous taxonomists. The O'Reillys fogging samples can have been little sorted since their collection last summer and the figures cited can, at best, be crude guesstimates (though claimed to be of the most conservative kind). There are many comparable collections for which the sorting has been "most all done". How do these compare? Erwin sorted 7,712 beetles from 19 trees replicated 3 times to yield 945 spp. of non-weevil beetles (i.e. 8.2 spms/sp)[7]. In Brazil, Erwin gained only 1,080 spp. of beetles from fogging 4 different forest types. Nigel Stork sorted 24,000 arthropods from Bornean trees into 2,800 spp (8.6 spms/sp)[3]. Basset trapped continuously in the canopy of 5 *Argyrodendron* trees at Mt Glorious for 2 years followed by scores of small scale canopy foggings; his total catch of 50,000 spms sorted by more than 30 taxonomists yielded only 900 species (55.5 spms/sp). At Bellenden Ker our party of 11 worked for three weeks at 5 different vegetational sites along a 5 km transect from 0 to 1500m alt. We used pitfall traps (1050 trap/nights), berlese extraction (76 samples), malaise traps, flight intercept traps, yellow pan traps, dung traps, fruit fly traps, light traps every night and we took 34 small knockdown samples from low vegetation. The 25,000 specimens (incl. non-insects) we processed with the help of 40 taxonomists over 2 years yielded 4029 spp in 237 families and we extrapolated this to 5100 spp to include unsorted taxa (4.9 spms/sp)[5]. The beetles and moths yielded 1514 and 1345 spp, respectively; the richest single site for beetles had 533 spp, for moths 763 spp. The ratio of 4.9 spms/sp for Bellenden Ker is low because the sampling covered 5 different altitudinal sites with low faunal overlap between them. One would expect to see a great increase in the ratio of spms/sp for large catches taken at one site; Basset's average of 55.5 for a 50,000 spm collection confirms this. Kitching's estimate for the O'Reillys collection of 420,000 spms of 100,000 spp yields an improbable 4.2 spms/sp.

Terry Erwin's much publicised estimate of 30 million tropical insects has been severely criticised recently by Nigel Stork[3,8]. Essentially Erwin's estimate was achieved by taking the 1200 species of beetles he collected from one tree species in Panama, assuming that 13.5% would only occur only on that tree, assuming that there would be half as many beetles again in the ground fauna, multiplying by 50,000 being the number of world tropical tree species, then extrapolating the figure from beetles to all insects. Stork points out that there is no reliable basis for making any of these assumptions and he suggests that a more reasonable estimate might lead to 10 million world species. Most vulnerable of Erwin's assumptions is the 13.5% host specificity rate (including 20% for the herbivores). The best data we have is probably Basset's detailed study of *Argyrodendron* insects from which he concluded that 10% of the herbivores and 3-4.5% of the overall insects are linked to that tree[2]. He criticises Erwin's specificity assumptions and points to growing evidence that tropical herbivores are much less host specific than temperate insects; there is also evidence that parasitic insects may be less diverse and less host specific in the tropics than has been assumed[9]. What is becoming clear is that Erwin-type guesstimates of global faunal diversity are probably not much of an advance on the accuracy of the previous intuitive guesses which have been dismissed as "pure hand waving"[10].

It is clear that global prognostications of quasi-infinite insect species can inhibit funding for taxonomy. Though as Stork and Gaston point out the stupendous funding channelled into mankind's idle curiosity about outer space seems bizarre when we don't even know how many species of insects occur on our own little planet[8]. I believe that the hard evidence for Australia is that we have a finite insect fauna and that we don't need Australia's science budget for the next 100 years to document it. Just the price of an occasional radio-telescope or satellite launch would have the job done in 20 years! The statistics on which a contrary view was broadcast on our highly influential "Science Show", just as our granting agencies are making final funding recommendations, need confirmation without delay.

Geoff MONTEITH
Myrmecia Editor

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# A MESSAGE FROM THE NEW PRESIDENT

The new President, Assoc.Prof.Dinah Hales, from Macquarie University.

A Society like ours is about communication, and I thought there might be some value in using the pages of *Myrmecia* to keep in touch with the membership.

Before I go any further, I'd like to thank retiring members of Council for their excellent service to the Society, and to welcome those who have replaced them. And also, of course, to thank the Organising Committee of the 21st Scientific Conference: a great effort, after which you can look forward to being irresponsible at the next meeting.

Well, back from the excitement and late nights of the Canberra Conference, I had a brief day of domesticity, doing the things left undone during my absence, e.g. remove dead fish from fish tank, complete previous week's washing/ ironing - this week's washing/ironing, get in new supplies, organise two eleven year olds' school projects. Then marked the invertebrate zoology exam papers, in which there was little evidence of scholarship. You might be interested in this rather alarming sample of inventiveness, to the best of my recollection unrelated to anything I said in the course: "Biological controls of the environment may be engineered such as the (? control) of teste flies in Africa by spreading testes flies with teste diseases".

Now I can turn my mind briefly to "business arising" from the Canberra meeting, and there are two main areas that I'd like to draw to your attention. The first is the major question of raising the public profile of entomology and entomologists. This is something that's in the hands of every one of us, and there are plenty of things that can be done. Most of the institutions for which we work have public relations officers under one name or another. Tell them what you're doing! Give them some photos! Tell them why what you are doing is (a) interesting and/or (b) important. It would be nice if the Society could have its own PR officer, but it is beyond us at the moment, and perhaps in any case we should first of all make sure we use the existing facilities to the best advantage. Another very effective method of reaching a wide audience is to visit your local school — especially your local primary school - and talk to a couple of classes about your work or about insects generally. My impression of NSW primary schools, at least, is that natural science is given limited attention, but that teachers welcome contributions from parents or friends. So gather up your slides, and be ready for lots of questions, and get some young Australians interested in a positive way in insects.

The second thing is that Council has asked me to review the Society's guidelines and practices in awarding its various honours and prizes. I'll be seeking specific advice from Council and relevant members of the Society, but these are matters of interest to everyone and I invite comment (in writing please, my address is inside the front cover) on any of the following:

1. Honorary membership (see Constitution) — what relative weight should be given to research excellence, service to the profession (e.g. seen in administration of an institution) and service to the Society?
2. The Ian Mackerras Medal — same questions as above; is the 50 year age limit appropriate?
3. The Phil Carne Prize for student research — what weights should be given to written presentation,

scientific merit, original thought, interest to the general membership of the society? How much input should the supervisor have in the presentation of the paper? Are the rules at present clear? Are they overly restrictive? Is there a need to distinguish between honours and higher degree students? Any other problems?

4. Illustration Award — there is a strong feeling in some quarters that there ought to be an open section in the Illustration Award. There are certainly shades of grey in eligibility to enter the award at present. How should this be resolved?

5. The Society's Research Grants — these are so new that no problems have been identified to me yet, but someone may like to comment. It would be good to have some young guys among the successful applicants next year, if the traditions for the presentation are to be maintained.

Dinah HALES
President

# Executive Quarterly Report

## MEETINGS

The Executive met on May 18, June 7 and July 17. Most of the information pertaining to the last meeting will appear in the next Quarterly Report.

## MEMBERSHIP

The Executive accepted 29 nominations for membership and elected 33 new members. The distribution of members as at July, 1990 is as follows:

| | | | | | |
|---|---|---|---|---|---|
| O/S | 60 | NSW | 167 | NT | 14 |
| QLD | 186 | VIC | 108 | WA | 51 |
| ACT | 123 | SA | 66 | TAS | 29 |
| UNKNOWN | 7 | | | | |

**Membership by category is:**

| | | | |
|---|---|---|---|
| Full | 621 | Joint | 26 |
| Student | 101 | Retired | 58 |
| Retired | 58 | Honorary | 5 |
| TOTAL | 811 | | |

## NEW MEMBERS

We welcome the following new members

**Elected May 18, 1990**

Ms E. BAKER, BAgrSc (Hons), Department of Ecosystem Management, University of New England, Armidale, NSW 2351. Elizabeth is working as a Junior Research Fellow on butterfly conservation with an interest in the history of pest control.

Mr S. BECKETT, BAModNatSci, CSIRO Division of Entomology, PO Box 1700, Canberra, ACT 2601. Stephen is a technical officer working in the Division of Entomology with interests in insect natural history, bees and horticulture.

Mr D.G. BLACK, BSc (BiolSci), BSc (Entomol), MSc, Zoology Department, LaTrobe University, Bundoora, VIC 3083. Dennis is a tutor studying millipede systematics for his PhD at LaTrobe University. He has interests in evolution, pollination ecology and ant survey work.

Ms L.R. BLANCO, MSc, 36 Baker Street, Carlingford, NSW 2118. Lilian is a PhD student at Macquarie University with considerable experience in radiation entomology and

also in aphid-host plant interactions.

Mr J.D. BROWN, RurTechCert, Department of Primary Industries, PO Box 591, Ayr, QLD 4807. John is working as a district experimentalist in the Entomology Branch. He has worked for 25 years on pests of tropical tree and field crops.

Dr W.V. BROWN, BSc, PhD, CSIRO Division of Entomology, GPO Box 1700, Canberra, ACT 2601. William is a Senior Experimental Scientist in the Division of Entomology working on insect defensive chemistry and chemotaxonomy.

Mr J.G. CLANCY, BSc (Hons), 426 Pacific Highway, Wyong North, NSW 2259. John has interests in taxonomy and general biology of insects.

Mr S. DICK, Department of Conservation and Land Management, Brian Street, Manjimup, WA 6258. Stephen is a technical officer with interests in forest entomology and rural tree decline.

Mr N. DRAYSON, BSc, 40 Carroll Street, Hughes, ACT 2605. Nick is an MSc student with interests in natural history and photography.

Dr M.A. ELGAR, BSc (Hons), PhD, School of Biological Science, University of New South Wales, PO Box 1, Kensington, Sydney, NSW 2033. Mark is a Queen Elizabeth II Postdoctoral Research Fellow working on mating and courtship behaviour in spiders and butterflies (Lycaenidae). He is also interested in sex allocation in social insects.

Ms J.F. GRIMSHAW, BSc, Department of Primary Industries Entomology Branch, Meiers Road, Indooroopilly, Brisbane, QLD 4068. Judy is a senior technician with an interest in spiders.

Dr A.A. HOFFMAN, PhD, Department of Genetics and Human Variation, LaTrobe University, Bundoora, VIC 3083. Dr Hoffman is a Senior Lecturer at LaTrobe University with research interests in the genetics of *Drosophila* and *Heliothis*, in particular stress resistance, host response and cytoplasmic incompatibility.

Ms D.S. KENT, BSc, DipAgrEnt, Forestry Commission of New South Wales, PO Box 100, Beecroft, NSW 2119. Deborah is a technical officer in the entomology section working on ambrosia beetles.

Mrs C. MARES, 83 Gibbons Street, Narrabri, NSW 2390. Cheryl is a technical officer with the CSIRO Division of Entomology working on cotton pests.

Dr D. PRIJONO, BSc, University of Queensland, Gatton College, Box 84, Lawes, QLD 4343. Djoko is a student in the Master's Program at Gatton College. He has interests in insect physiology and toxicology, and insecticidal properties of plant products.

Mr R. SPOONER-HART, BScAgr, MEd, DipEd, Faculty of Horticulture, University of Western Sydney, Hawkesbury, Bourke Street, Richmond, NSW 2753. Robert is Senior Lecturer and Associate Dean with interests in integrated pest management in horticultural crops, biological control and apiculture.

Ms C.A.F. URQUART, BA, 45 Castlewood Drive, Castle Hill, NSW 2154. Chris is a technical officer (entomology) at the Forestry Commission of New South Wales. She has interests in Hymenoptera and insect systematics.

**Elected June 7, 1990**

Mr P.C. DANGERFIELD, BSc, Entomology Department, Waite Agricultural Research Institute, Glen Osmond, SA 5064. Paul is a part-time Masters student with interests in braconids and entomological illustration.

Ms A. DAVIS, BA (Biol), Computer Centre, James Cook University, Townsville, QLD 4811. Alison is a Senior Programmer combining her knowledge of microcomputers and centralised databases with fauna survey work.

Dr F. DELIMA, BScAgric (Hons), MSc, PhD, DIC, Entomology Branch, Department of Agriculture, Baron-Hay Court, South Perth, WA 6151. Francis works in fruit fly disinfestation and stored product pests and has a broad interest in ecological methods.

Ms R. JACKSON, BA (Hons), DipSpEd, Zoology Department, James Cook University, Townsville, QLD 4811. Robyn is a PhD student planning a research project on insect herbivory on *Alphitonia* sp(p).

Miss L. JOHNSON, BSc, 20 Cugera Ave, Ingle Farm, SA 5098. Lynne is an Honours student who has interests in the circadian rhythms of mosquitoes.

Miss J. LLOYD, BSc, 20 Dean Ave, Belair, SA 5052. Janine is an Honours student interested in the Trichoptera, particularly *Oecetis*.

Mr A.J. MICK, BAgrSc, 28 Orton St, Mundubbera, QLD 4626. Anthony works as insectary manager and is experienced in mass rearing beneficial insects.

Mr P. MOREL, PO Box 1866, Cairns, QLD 4870. Pat's entomological interests include the Odonata and Hymenoptera.

Mr D.G. PHELPS, BRuralSc (Hons), 16 Glass St,

Armidale, NSW 2350. David is an education student with interests in plant/insect interactions and has studied the growth of *Mythimna convecta* and *Chortoicetes terminifera* on Mitchell grass.

Mr M.F. PURCELL, BAppSc (Biol), CSIRO Long Pocket Laboratories, PMB No. 3, Indooroopilly, QLD 4068. Mathew has interests in the biological control of water hyacinth, hydrilla and *Melaleuca quinquenervia*.

Miss A.M.E. ROACH, 20 Dana Street, Queanbeyan, NSW 2620. Alison is a BSc student working on the taxonomy and ecology of Coleoptera.

Mr W. ROCHESTER, BSc (Hons), Unit 39, Brigalow Court, O'Conner, ACT 2601. Wayne has interests in population genetics and is currently studying *Heliothis* migrations using entomological radar.

Ms S. ROZARIO, MSc (Entomology), Dept of Botany and Zoology, Monash University, Clayton, VIC 3168. Shelley's interests include insect/plant interactions, insect ecology and the biological control of insect pests.

Ms L. SILBERBAUER, BSc (Hons), 147 Perry Street, Fairfield, VIC 3078. Letitia is a Masters student who is interested in the sociobiology of Hymenoptera.

Dr P.R. SIMPSON, BSc (Hons), PhD, CSIRO Division of Entomology, GPO Box 1700, Canberra, ACT 2601. Paul has a background in the molecular genetics of *Drosophila*, Baculoviruses and Hymenoptera.

Mr Z.C. SHENG, Dept of Entomology, University of Queensland, QLD 4072. Zhen is interested in pest control and neurophysiology.

**Changes of name,address or title**

Mr V.R. BEJSAK, 53 Lamrock Avenue, Bondi Beach, Sydney, NSW 2026 (NSW).

Mr M. CAHILL, Bureau of Rural Resources, GPO Box 858, Canberra, ACT 2601 (NSW).

Ms R.M. COY, 29-31 View Street, Mt Evelyn, VIC 3796 (VIC).

Dr L.J. COOKSON, CSIRO Division of Forestry and Forest Products, PO Box 56, Highett, VIC 3190 (VIC).

Dr B.M. DOUBE, CSIRO Division of Soils, PO Box 2, Glen Osmond, SA 5062 (ACT).

Mr P. FLOWER, 33 Clarence Road, Indooroopilly, QLD 4068 (QLD).

Mr J. GEROZISIS, 22 Karilla Avenue, Lane Cove, NSW 2066 (NSW).

Dr K. GIBB, Northen Territory University, PO Box 40146, Casuarina, NT 0810 (NT).

Mr T.R. GLARE, MAF Technology, PO Box 24, Lincoln, Canterbury, NZ (?).

Dr J.G. HAMILTON, Australian Plague Locust Commission, Department of Primary Industries and Energy, GPO Box 858, Canberra, ACT 2600 (O/S).

Ms K.L. HERGSTROM, c/- Cropwatch, Plant Research Institute, Swan Street, Burnley, VIC 3121 (VIC).

Mr M.J. HOCKEY, 31 Stephenson Street, Oxley, QLD 4075 (NT).

Mr R.C. KASSULKE, 177 Dornoch Terrace, PMB 3, Highgate Hill, QLD 4101 (QLD).

Mr I.R. KAY, Entomology Branch, Department of Primary Industries, Ashfield Road, Kalkie, QLD 4670 (QLD).

Dr J. KING, Forestry Department, Department of Primary Industries, 80 Meiers Road, Indooroopilly, QLD 4068 (QLD).

Mr K.R. PULLEN, 6 Dianella Road, Pt Macquarie, NSW 2444 (ACT).

Mr G.B. SMITH, Bayer AG, GB-VT:V H/H, Pflanzenschutzzentrum, Monheim, Leverkusen 5090, West Germany (correction).

Dr S.L. WENTWORTH, Department of Botany and Zoology, Monash University, Clayton, VIC 3168 (VIC).

* Note that all members of the University of Queensland have a new post code: Department of Entomology, University of Queensland, QLD 4072.

**Resignations or deaths**

The Executive accepted resignations from Dr R. BACKHUYS and Mr G. EVERINGHAM.

The Executive was also sad to learn of the death of Mr K. MOORE, late of Yeppoon, Queensland.

**FROM THE MINUTES**

**Payment of subscriptions by credit card**

Plans are well advanced to initiate the option of payment of subscriptions by credit card. Details of this option will soon be made available.

# Annual Report, June 90

## THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INC.

The Executive is pleased to present the Society's Twenty First Annual Report for the period June 1989 to June 1990.

**Executive Meetings**

The Executive met on 13 occasions. Meetings were attended by the Assistant Secretary, The Assistant Treasurer and the W.A. Regional Councillor.

**Officers, Councillors and Executive Appointments**

EXECUTIVE OFFICERS:

| | |
|---|---|
| President | Dr T.R. New |
| Vice President | Dr T.J. Ridsdill-Smith |
| Secretary | Mr J.D. Sandow |
| Treasurer | Ms A.R. Hill |
| Public Officer | Dr P.B. Carne (to Jan.90) |
| | Dr I.D. Naumann (from Jan. 1990) |
| Chief Editor | Dr N.W. Heather |
| Business Manager | Mr J.F. Donaldson |

OTHER COUNCILLORS:

| | |
|---|---|
| Immed. Past President | Mr T. Passlow |
| Technical Editors | Dr B.K. Cantrell |
| | Dr P.G. Alsopp |
| | Dr D.J. Rogers |
| News Bulletin Editor | Dr G.B. Monteith |

REGIONAL COUNCILLORS:

| | |
|---|---|
| QLD | Mr D.H. Foley |
| | Dr P.H. Twine |
| | Mr R.I. Storey |
| NSW | Dr D.G. James |
| | Ms D. Heilpern (to 13/8/89) |
| | Ms M. Geary (from 26/10/89) |
| | Dr D.J. Bickel |
| ACT | Dr P. Cranston |
| | Dr E.J. Wright |
| VIC | Mrs J.A. Horne |
| | Mr P. Vaughan |
| TAS | Mr L. Hill |
| SA | Mrs A. Wells |
| | Dr D.A. Mackay |
| WA | Mr P.R. Davis |
| NT | Mr E.S.C. Smith |

REPRESENTATIVE COUNCILLORS:

Mr G. Daniels (Ent. Soc. of QLD)
Mr J.A. Macdonald (Ent. Soc of NSW)
Mr M.M. Hunting (Ent. Soc of VIC)

EXECUTIVE APPOINTMENTS:

| | |
|---|---|
| Assistant Secretary | Dr D.F. Cook (to 12/2/90) |
| | Mr R.N. Emery (from 18/5/90) |
| Assistant Treasurer | Dr D.K. Yeates |
| Assistant News Bulletin Editor | Mr G.I. Thompson |
| Editorial Assistant | Mrs K. Heather |

CONSERVATION COMMITTEE:

| | |
|---|---|
| Ms P. Greenslade (Conr) | Dr A.N. Andersen |
| Dr J.M.E. Anderson | Mr L. Hill |
| Dr B.Y. Main | Dr E.G. Matthews |
| Dr T.R. New | Dr D.P.A. Sands |

EDITORIAL BOARD:

| | |
|---|---|
| Dr I. Abbott | Dr B.R. Champ |
| Dr R. Domrow | A/Prof D.F. Hales |
| Dr K.L.S. Harley | Dr G.H.S. Hooper |
| Prof R.L. Kitching | A/Prof F.J.D. McDonald |
| Dr B.P. Moore | Dr M.J. Rice |
| Dr T.C.R. White | |

21 AGM ORGANISING COMMITTEE:

| | |
|---|---|
| Dr J.C. Daly (Conr) | Dr P.S. Cranston |
| Dr R.A. Farrow | Dr P.J. Gullan |
| Mr T.A. Weir | Dr P.W. Wellings |
| Dr E.J. Wright | |

22 AGM ORGANISING COMMITTEE:

| | |
|---|---|
| Mrs J.A. Horne (Conr) | Mr P. Horne |
| Dr T.R. New | Dr G. Farrell |

MARKETING PROMOTIONS COMMITTEE:

| | |
|---|---|
| Dr I.D. Galloway (Conr) | Dr N.W. Heather |
| Mr J.F. Donaldson | Dr P.J.M. McFadyen |
| Dr F.R. Wylie | |

**Membership**

The Society's membership grew substantially this year, with 95 new members enrolled. After resignations, etc, membership increased by almost 60, bringing our total number to 811. There are now 623 full members, 99 student members, 58 retired members, 26 joint members and 5 honorary members. Queensland can claim not only the greatest number of members (188), but also the most rapid growth, with a nett increase of 24 during the year.

The Executive recorded with regret the deaths of Dr P.B. Carne, Mr T. Greaves, Mr K. Moore and Dr N. Richardson.

**Australian Entomological Society Research Grants**

The Executive has been pleased with the response to the first year of the Research Grant Scheme. Four inaugural grants were announced in November, there were:

Mr I. BARRASS (Victoria). Travel to study rearing techniques for encyrtid wasps. ($400).

Mr R.J. KOHOUT (Queensland). Travel and subsistence to study taxonomy of *Polyrhachis* ants. ($2400).

Mr M.S. MOULDS (New South Wales). Artwork for cicada taxonomy. ($485). Mr C.A.M. Reid (Australian Capital Territory). Fieldwork to collect chrysomelid beetles in Queensland. ($660).

The second round of applications has now been assessed by the panel of referees. Successful applicants will be announced at the Annual General Meeting.

Following a suggestion put forward at the 20th AGM, the Treasurer has sought the advice of the Australian Taxation Office regarding the possibility of allowing tax deductibility on donations made to the Research Grant special account. A Council decision is expected to be made on this proposal at the 39th Council Meeting, and will be announced at the Annual General Meeting.

**The Biological Council of Australia**

In October 1989, Dr E. Jane Wright represented the Executive at a meeting held in Canberra to discuss the formation of the Biological Council of Australia. The meeting coincided with the Annual General Meeting of the Federation of Australian Scientific and Technological Societies (FASTS). This Society is currently an associate member of FASTS.

One of the aims of the new Council is to give the biological sciences a stronger voice in the political arena. Some of the impetus for its formation, stems from a perceived bias in the current membership of FASTS toward the physical sciences.

At the October meeting, a working party of 7 members was chosen to develop a constitution and consider the issue of funding for the Biological Council. The constitution, and other relevant background information, has now been considered by the Council of this Society.

The question of our membership of the Biological Council of Australia has been set down on the agenda of the 39th Council Meeting as advised in the May issue of *Myrmecia*. It is intended that the Council recommendation will be put to the Annual General Meeting for ratification by the membership.

**Update of the Directory of Australian Entomologists**

The Society has now published the 3rd edition of this extremely useful reference. The project was undertaken by Phil Carne, and following his death, has been capably completed by Kathy Pickerd and Ian Naumann.

It is hoped that the new Directory will be available for launch at the National Science and Technology Centre during the 21st AGM and Conference. Copies can be purchased through the Business Manager.

**Student Award**

Tim Heard receives the Student Award, now renamed the "Phil Carne Prize" from Leigh Carne, Phil's widow.

Seven entries were submitted for judging this year and the standard was high. Mr Tim Heard of the DPI, Entomology Branch, Indooroopilly, QLD, was awarded first prize. Tim will present his paper to the 21st AGM and Conference.

**Biological Illustration Competition**

The number of entries to this competition exceeded all past records and quite overwhelmed the Secretary. Fortunately, the newly appointed Public Officer, Dr Ian Naumann, agreed to oversee the judging of the entries at the ANIC. The winners of each section of the competition will be announced at the Annual General Meeting. The winning entries will be on display at the National Science and Technology Centre in Canberra.

**Honours**

The Executive was pleased to note the number of scientists who appeared in the Queen's Birthday Honours List this year. Especially gratifying was the award of the Officer of the Order of Australia to Dr Pat Marks for services to entomology. The Executive has passed on its sincere congratulations to Pat on her achievement.

## TREASURER'S REPORT 1989

During 1989 the Society's financial position improved further and is currently quite satisfactory, as evidenced by the attached audited accounts.

Total Society investments now stand at $61,420, composed of $46,420 in SIROCREDIT ($45,290 of which is dedicated to the AES Research Grants Scheme), and interest bearing deposits of $10,000 and $5,000 with the General Account and the Publications Account, respectively. These investments, and the working General and Publications Accounts, returned a total of $9,606 in interest for the year. The Society benefited greatly from the high interest rates prevailing during 1989.

The production of "Myrmecia" (formerly the News Bulletin) cost $6,855 for the year, accounting for approximately 22.25% of the total General Account income, compared with $5072 and 20% in 1988. This was offset by $327 in advertising income.

The Editorial Assistant's salary was $5,371 for the year, accounting for 15.2% of total General Account income for 1989. The increase over the salary paid in 1988 is due to automatic indexation to National Wage Case rises.

The Journal made a loss of $1,614 in 1989, compared with a profit of $1,427 in 1988. A subsidy of $5,000 was made to the Publications Account from the General Account during the year.

$3,945 was allocated under the AES Research Grants Scheme in 1989. This amount was taken from the General Account but future grants are to be funded from interest earned on the AES Research Grants Account.

The taxation return for 1989 will show once again that, for the purposes of the Act, the Society incurred an operating loss for the year. Consequently, there is no taxation liability.

Our auditor, Mr Graeme Wovodich of Dalbrook Financial Planning Centre Pty Ltd, has prepared a comprehensive document of the Society's financial situation and has met our obligations to the Australian Taxation Office. I thank him for the work he has put in.

**Subscription Rates**

Although the total operating surplus of the Society in 1989 was $6,232, this was largely attributable to our income from bank interest and the profit from the 19th AGM ($9,606 and $5,357 respectively). The Society cannot rely on high returns on our investment capital indefinitely. Interest rates have already declined from their exceptionally high levels of 1988/89. The unprecedented profit generated from the 19th AGM and conference must be regarded as a "windfall" rather than a reliable source of income. Although organising committees are becoming adept at attracting sponsorship, AES conferences are not intended to be run as profit generators to subsidise general Society operations.

The subscription rates of the Australian Entomological Society have remained unchanged since 1982, with increased costs being absorbed and offset by the interest earned on the Society's capital base. Should interest rates fall, the need to raise subscription rates substantially may become an urgent necessity. It is advisable that the Society reviews its subscriptions rates now, to keep pace with inflation rather than be faced with a serious shortfall in the future.

This issue is particularly pertinent this year, in view of the proposals to join the Biological Council of Australia and to provide paid assistance to relieve some of the workload carried by the Executive. Both these initiatives will involve the Society in extra expense. If they are approved, or even

if there is a possibility that they will be approved in the near future, an increase in subscription rates is inevitable.

As Treasurer, I recommend an increase of $10 per annum for full and joint membership (from $30 to $40, and from $35 to $45 respectively, with a $5 rebate for accounts paid prior to 1 March), and an increase of $5 per annum for student and retired membership (From $15 to $20, with a $2.50 rebate for accounts paid prior to 1 March). As at present, new members will pay the relevant rebated amount. I also recommend that subscriptions for Sustaining Associates should rise from $75 to $100 per annum, and subscription for Affiliated Societies from $30 to $40. The higher rates, if approved by Council, will take effect from the 1991 subscriptions. This increase is equivalent to 3.5% p.a. compounded over the nine years since the last increase, and is not unreasonable in comparison with the inflation rate over the same period. The Society would remain one of the least expensive of its type in the country.

**Credit Card Facilities**

Taking effect from November 1990, the Society will accept payment of subscriptions by credit card. Facilities available will be: Bankcard, Mastercard, Visacard, American Express and Diners' Club.

I wish to thank all members for their co-operation during my term as Treasurer. I am particularly grateful to David Yeates, David Cook and Peter Davis for their assistance. I wish the incoming Treasurer every success.

Anne R. Hill
(Treasurer)

# AUDITOR'S REPORT

## THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INCORPORATED

**Profit & Loss Account and Balance Sheet**
**For the Year ended 31 December 1989**
Balance Sheet as at 31 December 1989

| | Note | 1989 ($) | 1988($) |
|---|---|---|---|
| CURRENT ASSETS | | | |
| Cash | 2 | 11 433 | 18 142 |
| Receivables | 3 | 3 046 | 2 970 |
| Inventories | 4 | 15 900 | 8 643 |
| Other | 5 | | 50 |
| | | 30 379 | 30 255 |
| NON CURRENT ASSETS | | | |
| Investments | 6 | 61 420 | 57 398 |
| Total Assets | | 91 799 | 87 653 |
| CURRENT LIABILITIES | | | |
| Creditors & Provisions | 8 | 10 240 | 12 326 |
| Total Liabilities | | 10 240 | 12 326 |
| TOTAL NET ASSETS | | $81 559 | $75 327 |
| ACCUMULATED FUNDS | | | |
| Retained Surplus | 9 | 81 559 | 75 327 |
| TOTAL FUNDS | | $81 559 | $75 327 |
| TRUST FUNDS & MEDALS | 7 | $ 3 065 | $ 3 003 |

**General Income and Expenditure Statement**
**For the Year ended 31 December 1989**

| | Note | 1989($) | 1988($) |
|---|---|---|---|
| INCOME | | | |
| Subscriptions Received | | 17 533 | 15 448 |
| Interest Received | | 8 680 | 6 146 |
| Surplus Funds — AGM's | | 5 357 | 3 299 |
| Sales | | 32 | 80 |
| Advertising Income | | 327 | 494 |
| CSIRO Journals | | 3 288 | 91 |
| Postage Refunds | | 84 | |
| | | 35 301 | 25 558 |
| LESS Stock on hand — Medals | | | |
| Opening balance | | 2 229 | 2 229 |
| Closing balance | | (2 229) | (2 229) |
| | | 35 301 | 25 558 |
| LESS EXPENSES | | | |
| News Bulletin | | 7 855 | 5 072 |
| Salary — Editorial Asst. | | 5 371 | 4 848 |
| Publications & CSIRO | | 1 975 | 575 |
| Auditor's remuneration | 10 | 1 750 | 1 700 |
| AGM expenses | | 1 000 | 1 500 |
| Stationery & Postage | | 1 860 | 1 672 |
| Bank charges & incidentals | | 37 | 106 |
| Journal labels | | - | 22 |
| Awards: | | | |
| Biological Illustration Competition | | 800 | 800 |

| | | |
|---|---|---|
| Research Grants | 3 945 | - |
| Student Award | 674 | 642 |
| Grant to AES promotion | - | 500 |
| Subsidy to magazine publ. | - | 1 000 |
| Tfr of executive costs | - | 230 |
| Subscription FASTS | 508 | 125 |
| Conservation Committee | - | 20 |
| Filing Cabinet | - | 160 |
| Hall - hire | - | 25 |
| Mackerras medal engraving | - | 6 |
| Petty Cash | 925 | - |
| Executive travel | 374 | - |
| Photocopying AGM | 231 | - |
| IUCN Conference | 150 | - |
| | 27 455 | 19 003 |
| Operating Surplus | 7 846 | 6 555 |
| Income Tax expense | - | - |
| Operating Surplus | $7 846 | $6 555 |

(Notes to and forming part of these accounts are annexed)

**THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INC.**
**Publications Income & Expenditure Statement**
**For the Year ended 31 December 1989**

| | Note | 1989($) | 1988($) |
|---|---|---|---|
| INCOME | | | |
| Subscriptions received | | 15 250 | 16 209 |
| Interest received | | 926 | 772 |
| Income from page charges, reprints, back issues & cards | | 12 157 | 12 050 |
| | | $28 333 | $29 031 |
| EXPENDITURE | | | |
| Opening stocks 1/1/89 | | 6 414 | 648 |
| Closing stocks 31/12/89 — publications | | 13 671 | 6 414 |
| | | $(7 257) | $(5 766) |
| Typing costs | | - | 4 290 |
| Printing costs | | 30 684 | 26 848 |
| Postage — Journals | | 2 669 | 2 091 |
| Petty Cash | | 1 050 | - |
| Bank Charges | | 10 | 41 |
| Workers Compensation | | 20 | - |
| Subscriptions | | - | 100 |
| Printing of reprints | | 1 959 | - |
| Stationery | | 762 | - |
| Postage — Other | | 50 | - |
| | | $37 204 | $33 370 |
| Operating Profit/(Loss) | | (1 614) | 1 427 |
| Income tax expense | | - | - |
| Deficiency for the year | | $1 614 | $1 427 |

**THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INC.**
**NOTES to and forming part of the Accounts**
**For the Year ended 31 December 1989**

NOTE 1 PRINCIPAL ACCOUNTING POLICIES

The accounting policies adopted by the Society in its accounts are in accordance with the accounting standards issued by the Australian Accounting Bodies and generally accepted accounting principles. Where a choice exists between two or more acceptable accounting methods the notes fully explain the method adopted.

(a) HISTORICAL COST ACCOUNTING

The accounts have been prepared under the Historical Cost Convention and have not been adjusted to take into account changing money values or current valuations of non-current assets or their impact on the operating results.

(b) STOCK ON HAND

Stock on hand has been valued at the lower of cost and net realisable value.

(c) INCOME TAX

The income tax expense charged against operating result is based on the liability method of Tax Effect Accounting whereby the current liability and future liability in respect of the year's results are included at the rate applicable at balance date in accordance with the law at that date and future income tax benefits are brought to account when the future realisation of the benefit can be regarded as assured beyond any reasonable doubt.

Future income tax benefits in respect of losses which will not be reduced in the foreseable future are not brought to account. Income tax is payable on that portion of income less expenses attributable to non-members only.

| | | 1989($) | 1988($) |
|---|---|---|---|
| NOTE 2 | CURRENT ASSETS — CASH | | |
| | Cash at hand | 1 | 15 |
| | Cash at bank | | |
| | — General account | 2 944 | 4 512 |
| | — Publications account | 8 488 | 13 615 |
| | | $11 433 | $18 142 |
| NOTE 3 | CURRENT ASSETS — RECEIVABLES | | |
| | Debtors | $ 3 046 | $ 2 970 |
| NOTE 4 | CURRENT ASSETS — INVENTORIES | | |
| | Stock on hand — Publications | 13 671 | 6 414 |
| | — Medals | 2 229 | 2 229 |
| | | $15 900 | $ 8 643 |
| NOTE 5 | CURRENT ASSETS — OTHERS | | |
| | 5th Australian Conference Invertebrate Ecology, Vic. Interest free loan — payable on call | $ - | $ 500 |
| NOTE 6 | NON CURRENT ASSETS — INVESTMENTS | | |
| | Interest bearing deposits | | |
| | CBA — Victoria Park | 10 000 | 10 000 |
| | Publications — CBA | 5 000 | 5 000 |
| | General — CBA | - | 10 000 |
| | Sirocredit — A/C10968 | 39 864 | 32 398 |
| | Sirocredit — A/C101440 | 6 556 | - |
| | | $61 420 | $57 398 |
| NOTE 7 | TRUST FUNDS & MEDALS | | |
| | Ian Mackerras Memorial Medal Fund | | |
| | Balance — 31/12/1988 | 3 003 | 3 147 |
| | Interest received | 62 | 60 |
| | | $ 3 065 | $ 3 207 |
| | LESS cost of medals presented during year | - | 204 |
| | Balance 31/12/1989 | $ 3 065 | $ 3 003 |
| | Represented by: | | |
| | Cash on deposit — Sirocredit | 836 | 774 |
| | Interest receivable Stock — Ian Mackerras Memorial Medals on hand at cost | 2 229 | 2 229 |
| | | $ 3 065 | $ 3 003 |
| NOTE 8 | CURRENT LIABILITIES - CREDITORS AND PROVISIONS | | |
| | Subscriptions in advance | 3 040 | 3 870 |
| | Creditors & accrued charges | 7 200 | 8 456 |
| | | $10 240 | $12 326 |
| NOTE 9 | ACCUMULATED FUNDS — RETAINED SURPLUS | | |
| | Balance 1 January 1987 | 75 327 | 67 345 |
| | Surplus for year | | |
| | Publications Account | (1 614) | 1 427 |
| | General Account | 7 846 | 6 555 |
| | | $81 559 | $75 327 |
| NOTE 10 | AUDITORS REMUNERATION | | |
| | Total amounts receivable by the auditors of the Society | | |
| | Audit Fees | 850 | 800 |
| | Other services | 900 | 900 |
| | | $ 1 750 | $ 1 700 |

## AUDITORS REPORT

**to the Members of**
**THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INCORPORATED**

I have audited the books of account and other records of The Australian Entomological Society Incorporated for the year ended 31 December 1989 in accordance with Australian Auditing Standards and report as follows:

(a) I have obtained all the information and explanations which to the best of my knowledge and belief were necessary for the purpose of my audit.

(b) The Society, in common with similar non profit making associations in unable to have a full system of internal control over income and consequently I was unable

to confirm that all subscriptions and funds receivable by the Society have been properly accounted for. However, I was able to sight adequate support for income and expenditure recorded in the books of account. Subject to the above, in my opinion the attached balance sheet, statement of income and expenditure, statement of sources and applications of funds and notes to the accounts are properly drawn up so as to exhibit a true and fair view of the financial position of the Society at 31 December 1989.

(c) The financial statements have been prepared in accordance with the Australian Accounting Standards and applicable approved accounting standards.

G.V. Wovodich
REGISTERED COMPANY AUDITOR
PERTH 28 May 1990

## CHIEF EDITOR'S REPORT
### THE AUSTRALIAN ENTOMOLOGICAL SOCIETY

This report covers the period 1 January to 31 December 1989.

**Journal**

Production statistics for the Journal of the Australian Entomological Society during the period (with figures for 1988 in parenthesis) were as follows :

**Manuscripts**

| | | |
|---|---|---|
| received | 72 | (61) |
| accepted | 54 | (42) |
| rejected | 9 | (5) |
| withdrawn/lapsed | 11 | (4) |
| with Tech Eds | 52 | (42) |
| awaiting printing 1.12.88 | 9 + 2 book reviews | (7) |
| ready for publication 1.12.88 | 117 pages | 89 pp |

The number of manuscripts submitted during the year was similar to that for recent years. However, acceptances varied from 6–17 per quarter (issue period) and this caused a reduction in page numbers for one issue yet left a small surplus at the end of the year. Publication time for a manuscript requiring minimal amendment remained at less than one year which is believed to compare favourably with other journals with similar levels of refereeing and editing.

**Publication**

| Volume | Part | Published | Pages | Papers | Reviews and thesis abstracts |
|---|---|---|---|---|---|
| 28 | 1 | Feb 28 | 80 | 15 | 3 |
| | 2 | May 30 | 80 | 13 | 3 |
| | 3 | Aug 31 | 64 | 11 | 3 |
| | 4 | Nov 30 | 80 | 12 | 3 |

The total number of pages was down on our norm of 240 as a result of the one 64 page issue. However we have published a number of 96 page issues in recent years and at least one issue of this size should be possible in 1990.

Despite liquidation of the parent company of our printer, publication schedules were maintained. It is expected that the printing company, which is a viable business, will continue under different ownership or management thus ensuring continuity of our publication.

No major changes in format were undertaken during this year. As might be expected there is a wide divergence of preferences amongst members on features such as cover colour, page size and page format. On balance we elected not to make any major changes. One small change made was to the print size of the contents listing on the back cover, to make it more easily read against the red background.

**Miscellaneous publications**

During the year plans were set in motion for a new edition of the Directory of Australian Entomology planned for publication by the 21st AGM. Also planned is a new edition of Misc. Publ. No. 3, "Collection and Preservation of Insects". The senior author of this latter publication has experienced some delays to his rewriting schedule but is hopeful of completing it before the 22nd AGM.

**General**

The editorial staff was stable during the year. The input of the three technical editors, Drs Allsopp, Cantrell and Rogers deserves special recognition by the Society. These are honorary positions and their editing is undertaken in addition to their already onerous jobs. Not infrequently, this goes unrecognised and unappreciated by authors. I am greatly appreciative of their efforts together with those of the Business Manager, Mr John Donaldson, for the excellent cooperative spirit which has existed in the Journal team. I

would also like to record my appreciation of the efforts of my wife, Katie Heather, who has continued to work as editorial assistant, taking responsibility for most of the production arrangements.

I do not propose to re-nominate for the position of Chief Editor and my term of office will end with the 21st AGM. I wish the new team well in this our 29th year of publication and beyond. My time as Editor has been both rewarding and enjoyable and I am most appreciative of the Society's confidence in me over the past seven years. I believe that I am handing on the Journal in at least as good editorial and financial condition as it was when I took over from Dr Gordon Hooper. It is a professional enterprise of which the Society can be justly proud and which members should support to their fullest abilities.

N.W. HEATHER
Chief Editor

## NEWS BULLETIN EDITOR'S REPORT

A synopsis of costs, advertising revenue and page size for the 4 issues of 1989 is as follows:

| | Costs | Advertising Income | Pages |
|---|---|---|---|
| Feb Issue | 1520.95 | | 48 |
| May Issue | 2114.98 | 100.00 | 64 |
| Aug Issue | 1505.86 | 230.00 | 44 |
| Nov Issue | 1714.12 | 50.00 | 52 |
| TOTALS | $6855.37 | $380.00 | 208 |

This year saw the commencement of the new format News Bulletin under the new title of "Myrmecia". Reaction to the changes appears to be uniformly good and a new standard of professional appearance has been achieved. This has not been without financial cost however and the annual production costs rose by 35% on those of calendar 1988. A large component of these increased costs stems from the introduction of paid graphic design and computer layout to replace the manual "cut and paste" by which camera-ready layouts were produced previously. This has greatly reduced our personal workload with the added benefit of a more elegant final job.

Increased printing costs also have contributed but these are to be expected with growing print runs to accommodate our rapidly growing membership. The size of the Bulletin continues to grow also with a record 208 pages printed during 1989, a 20% increase on 1988's 172 pages. Page numbers of the Bulletin have increased by a cumulative 62% in the last 5 years. In that time unit cost per copy of the Bulletin delivered to members' hands has risen from $1.21 to only $2.12 per copy.

We are grateful to all contributors of copy for "Myrmecia", particularly the far-flung Regional and Representative Councillors who are the eyes and ears of the magazine. At the Queensland Museum we are indebted to Lynette Kirwan (mailing), Paul Ramsden (graphic design) and Peta Woodgate (typing) for their cheerful and efficient help. Without All Clear Offset (a.k.a. Vibropress) our reliable and obliging printers, and who have cranked the Bulletin out since Day 1 in Brisbane, there would be no "Myrmecia". Lastly, I'm personally grateful to Assistant Bulletin Editor, Geoff Thompson, for his help at all stages of production.

Geoff MONTEITH
News Bullitin Editor

## BUSINESS MANAGER'S REPORT

**VOLUME 28**

| | |
|---|---|
| Part 1 printed on 28.ii.1989 | 80 pages |
| Part 2 printed on 31.v.1989 | 80 pages |
| Part 3 printed on 31.viii.1989 | 64 pages |
| Part 4 printed on 30.xii.1989 | 80 pages |

**Expenses**

| | 1 | 2 | 3 | 4 | TOTAL |
|---|---|---|---|---|---|
| Journal | 6,740.00 | 6,740.00 | 5,480.00 | 6,740.00 | 25,700.00 |
| Reprints | 442.40 | 409.20 | 281.00 | 395.60 | 1,528.20 |
| Postage | 553.62 | 584.52 | 626.50 | 654.66 | 2,419.30 |
| TOTAL | 7,736.02 | 7,733.72 | 6,387.50 | 7,790.26 | 29,647.50 |

**Income**

| | | | | | |
|---|---|---|---|---|---|
| Reprints | 2,560.00 | 2,105.00 | 1,990.00 | 2,200.00 | 8,855.00 |
| Subscriptions | | | | | 15,304.19 |
| TOTAL | | | | | $ 24,159.19 |

DEFICIT FOR VOLUME 28 $5,488.31

**FINANCIAL REPORT FOR THE YEAR 1989**

| | | |
|---|---|---|
| Opening Balance | | $13,615.40 |
| Income | | |
| Subscriptions | 15,362.89 | |
| Transfer from general acc. | 5,000.00 | |
| Sale of Vol. 6 onwards | 715.00 | |
| Reprints | 9,548.00 | |
| Sale of M.P. 3 | 761.88 | |
| Sale of M.P. 4 | 44.00 | |
| Sale of M.P. 5 | 904.10 | |
| Cards | 184.25 | |
| Postage recovered | 177.75 | |
| Interest | 926.10 | |
| Cheque not presented | 40.19 | |
| TOTAL | $33,664.16 | |
| Expenses | | |
| Printing of Journal | 31,980.00 | |
| Printing of reprints | 1,959.40 | |
| Postage on Journal | 2,847.34 | |
| Envelopes | 761.68 | |
| Petty Cash | 1,050.00 | |
| FDT | 10.40 | |
| Australia Post | 50.00 | |
| W.C.B.Q. | 20.00 | |
| Cancelled subscriptions | 20.00 | |
| Returned cheque & charges | 92.47 | |
| TOTAL | $38,791.29 | |
| Closing balance | | $8,488.27 |

**PETTY CASH**

| | | |
|---|---|---|
| Opening balance | | $14.68 |
| Income | | |
| From publications acc. | 1,050.00 | |
| Expenses | | |
| Postage | 266.80 | |
| Stamps | 763.52 | |
| Stamp duty | 16.00 | |
| Stationery | 17.10 | |
| TOTAL | $1,063.42 | |
| Closing balance | | $1.26 |

J.F. Donaldson
BUSINESS MANAGER

# ANNUAL REPORT OF THE CONSERVATION COMMITTEE

Members of the committee who attended the 20th AGM at Macquarie University in Sydney, J. Anderson, T. New, and P. Greenslade, held an informal meeting and the convenor also met members of the Executive separately. Several topics were discussed including the need to decide on a policy of promotion for insect conservation with regard to the rather limited resources of the committee in terms of manpower, time and money. The proposed Charter on Invertebrates was also discussed and an Australian version of European Charter was adopted in July 1990 by Concom (Council of Nature Conservation Ministers).

**Previous submissions**

Some of our recommendations concerning conservation in the Antarctic are being adopted by the Australian Antarctic Division. We had an appreciative letter from the secretary to the Land Degradation Inquiry saying that our submission was helpful to them.

**Correspondence**

In the Prime Minister's Statement on the Environment insects were not mentioned although much emphasis was given to the conservation of biodiversity and to the endangered species unit in Australian National Parks. Letters were sent to the relevant bodies stressing the need to consider insects in both these areas.

We also wrote letters to the South Australian Department of Environment and the Northern Territory Government stressing the need to address the problems of invertebrate conservation. These letters referred to the Concom Charter on Invertebrates. So far no reply has been received to either letter.

We also wrote to the Minister, Graham Richardson and to the Director, Dr Ovington, pointing out the need for the new Endangered Species Unit in the Australian National Parks Service to pay particular attention to invertebrates. These letters received a reply.

**Submissions to government enquiries made this year**

1. A submission to ASTEC's inquiry into the state of environmental research in Australia was prepared, which emphasised the importance of taxonomy.
2. A draft policy statement released by the Advisory Committee for the Endangered Species Unit was

entitled "An Australian National Strategy for the Conservation of Species and Habitats Threatened with Extinction". Our submission stated that we considered the Strategy totally inadequate as far as invertebrates are concerned as it was directed predominantly towards vertebrates. We recommend that the Unit employ an invertebrate specialist under contract to provide an additional plan which addresses the needs of invertebrate conservation.

3. A listing of environmental projects with which members of the Society are involved, for the Federation of Australian Scientific and Technological Societies (FASTS) was prepared. FASTS requested examples of how "the work of our members is essential for the interest of the environment" in order to be in a position to "stress the role of science and technology in understanding the environment and managing it responsibly in the run up to the next election". When the data for FASTS were completed it comprised 56 projects being carried out by 29 Society members. These research activities pursued particular lines which can be summarised as follows:
   a. Use of certain insects as indicator groups to monitor environmental and climatic (greenhouse) changes in terrestrial and aquatic habitats.
   b. Use of insects for biocontrol of invertebrate and plant pests.
   c. Adoption of other non-chemical means of pest control such as release of pheromones, male sterilisation, controlled atmospheres, resistant strains, and changes in agricultural and industrial practices.
   d. Conservation park management and the selection of optimum park size to maximise biodiversity.
   e. Role of insects in rural dieback.
4. A submission in response to a request for public participation in management of the Tasmanian World Heritage Area was prepared. Our main points were the need to control recreational activities such as trout fishing, bush walking and exploitative activities such as honey production and firewood collection since they can all have a damaging effect on invertebrate habitats.
5. We were asked by the Joint Scientific Committee on South- East Forests of New South Wales, to prepare a background paper for their report on the role of invertebrates in maintaining the eucalypt forest ecosystem and on what is known of the fauna of the South-East Forests in particular. About a dozen members of the Society provided a page or so of text on how their particular area of expertise relates to this question. Our submission which altogether involved work by 20 Society members including three referees, finally ran to 20 pages for which we were paid $2000. The report is confidential until released by the relevant Ministers. Apparently it will be included in summarised form in the final report of the Joint Scientific Committee into the South-East Forests due out at the end of June.
6. The submission on the South-East Forests provides a good basis from which we are preparing a submission to the Resource Assessment Commission (RAC's) Inquiry into Australia's Forest and Timber Resources. The officer heading this Inquiry has specifically requested some input from us as he well appreciates the importance of invertebrates. Topics which we are addressing in particular are:
   a. Determination of the minimum reserve system necessary to conserve representative examples of a given proportion (eg. 90%, 95%, etc.) of the forest communities of Australia.
   b. Collation of scientific evidence on the effect of forestry practices on the conservation of wildlife.
7. We are also currently preparing a submission to the Resource Assessment Commission's second Inquiry on Kakadu.
8. A submission to the government inquiry into coastal environments and their management was unfortunately not completed due to lack of manpower and time.

We have been asked by the Heritage Commission to consider the registration of invertebrate sites by the National Estate. There have so far been no sites accepted because the paper work involved is considerable and it would be necessary to employ someone specifically for the purpose.

**Meetings**

A symposium on Insect Conservation organised by the Royal Entomological Society of London was held in September 1989 to which T. New and P. Greenslade contributed a paper entitled "Australia: conservation of a continental fauna". They also spent one day at an IUCN

workshop which discussed a global strategy for invertebrate conservation. A meeting was held in Sydney in early December to discuss the Draft Strategy of the Endangered Species Unit which the convenor attended.

A new member to the Committee was appointed this year, Rhondda Jones, who has agreed to replace Don Sands as the representative for Queensland. Don asked to stand down because of work commitments. We would like to thank Don very much for his work on the committee over many years.

Penelope GREENSLADE
Conservation Committee Convenor

## REPORT OF THE MARKETING COMMITTEE

### Introduction

At a meeting of the Australian Entomological Society Inc. held at the Macquarie University on Friday 5 May 1989, Dr Ian Galloway was invited to convene a committee to administer the Society's marketing strategy. Subsequently Dr Ross Wylie and Dr Paul McFadyen were invited by the convenor to form the AES Marketing Committee. The Chief Editor and the Business Manager attended meetings when their advice was required.

1. A REVISION OF MISCELLANEOUS PUBLICATION NO. 3

A large part of the deliberations of the Marketing Committee were taken up with discussions relating to a proposed revision of Miscellaneous Publication No. 3. Following the first meeting of the Marketing Committee, Mr Murray Upton was contacted by the Chief Editor and agreed to undertake a revision of the publication. Max Moulds kindly consented to be the editor. It was suggested by the Committee that an appropriate payment should be made to Mr Upton for this task. With regard to the revision itself the following suggestions were made.

- include more photographs
- review the page size, print size and layout
- include larger illustrations
- include some Order specific techniques
- have a more attractive cover and improve the binding
- review the selling price
- investigate wider distribution of the publication

It was decided that the Marketing Committee should prepare a marketing plan to promote the publication. If possible it was considered desirable that the publication be printed in time for launching at the Society's 21st birthday celebrations in July 1990 in Canberra. After an examination of records of past sales of Miscellaneous Publication No. 3, the target market for the publication was determined and strategies developed on appropriate ways to reach that market. Promotion strategies were also examined and detailed. A number of product characteristics were recommended which the Committee felt would improve the marketability of the publication.

The Committee was advised by the Chief Editor on 19 January 1990 that the revision of Miscellaneous Publication No. 3 could not be completed to meet the July 1990 deadline. Further consideration of this publication by the Committee was therefore delayed until a publication date could be determined.

2. TAXONOMIC CATALOGUES

The Committee decided that while taxonomic catalogues were an appropriate subject for the Occasional Publication series their limited market potential suggested that cost or near cost recovery would be necessary. However this needed to be assessed on a case by case basis and was more appropriately in the area of responsibility of the Publication Committee.

3. BUDGET PRICED INTRODUCTORY ENTOMOLOGY TEXT BOOK

A draft questionnaire was designed by the Committee to test the market potential for this type of publication. The following were also considered -

- who would receive the questionnaire
- product options to be offered
- target market

In August 1989, the Committee was informed by the President that Oxford University Press had investigated the market for such a text and had concluded that the proposition was not viable. In view of this the Committee decided to shelve its survey.

4. GREETING CARDS

The Committee supported the publication of a new batch of greeting cards using illustrations from the Society's Annual competitions. With regard to the promotion of the cards the Committee recommended that -

- members be continually reminded that they are available
- cards should therefore be advertised in every issue of "Myrmecia" and strongly promoted at every gathering of entomologists

5. CHRISTMAS CARDS

The Committee has discussed the publication of Society Christmas Cards. It was felt that this was one time of the year when most people bought cards and it was always difficult to find appropriate ones for overseas friends and colleagues. It was recommended that a special "Christmas card" section be included in next years illustration competition. The illustration could be serious or humorous.

6. JOTTER

The Committee is currently exploring the marketing potential of a jotter bearing an embossed or printed image of an insect at the top.

I.D. GALLOWAY
Marketing Committee Convener

**Acknowledgments**

Perth Executive members wish to thank all Executive Officers, Councillors and Executive appointments for their considerable efforts throughout the year. The Executive believes that the continuing rapid growth of the Society is testament to the healthy enthusiasm which pervades all its many facets.

Special thanks are due to the Chief Editor, Dr Neil Heather, who is retiring from that position at this Annual General Meeting. The Journal is an important visible product of this Society as far as non-members are concerned. Neil has maintained high standards for this publication over the period of 8 years that he has been Chief Editor. His contribution, and that of Katie Heather as Editorial Assistant, has been of great value to the Society.

The retiring members of the Perth Executive, Mr John Sandow and Ms Anne Hill, are grateful for the opportunity to have served the Society, and wish the incoming Officers every success.

Thanks are extended to Mrs Margaret Wallace who has typed the Executive minutes and reports.

# Minutes of 21st AGM

**THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INC**

Minutes of the 21st Annual General Meeting held at the CSIRO Division of Entomology at 5.30 pm on Tuesday, July 3, 1990.

**Opening**

The President, Dr T.R. New opened the meeting and welcomed the other 103 members in attendance. (A signed register is attached to the file copy of these minutes).

**Announcement of Proxies and Apologies**

Apologies were received from (proxies in brackets): Dr A. Austin (Dr A. Wells), Dr H.J. Banks, Mr P.R. Davis (Mr J. Sandow), Mr J.F. Donaldson, Dr G.B. Monteith (Mr G.I. Thompson), Mr E.S.C. Smith (Dr G.D. Rippon), Mr R.I. Storey (Dr I.D. Naumann), Mr P. Vaughan (Dr G.S. Farrell).

**Deaths of Members**

Members stood in silence as a tribute to Dr P.B. Carne, Mr T. Greaves, Mr K. Moore and Dr N. Richardson whose deaths had been recorded since the previous AGM.

**Minutes of the 20 AGM**

The minutes of the 20th AGM, published in the News Bulletin in May 1989 and available at the meeting, were adopted (moved A/Prof D. Hales, seconded A/Prof F.J.D. McDonald). No business arose from them.

**Annual Report of the Executive**

The Chairman of the Executive, Dr T.J. Ridsdill-Smith, spoke to the first part of this report highlighting various items including the increase in the Society's membership and the launch of the 3rd edition of the Directory of Australian Entomology. He also reiterated the Society's pleasure in acknowledging the award of Officer of the Order of Australia to Dr Pat Marks for services to entomology.

Ms A.R. Hill summarised the Treasurer's report noting that although the Society's operating surplus for 1989 was high, income was derived from sources which could not be

regarded as reliable. The Treasurer reported that her recommendation that the Society's subscription rates should rise, as set out in the Treasurer's Report, has been supported unanimously at the 39th Council Meeting.

The Chief Editor, Dr N.W. Heather, presented his report acknowledging the efforts of the Technical Editors and of the Editorial Board. Dr Heather also acknowledged the cooperation of successive Executives and expressed his satisfaction at handing on the Journal in sound condition to his successor.

He recommended that the Executive consider the possibility of increased cooperation between General and Applied Entomology, The Australian Entomological Magazine and the Journal of the Australian Entomological Society. The suggestion was supported by Dr C.N. Smithers.

Noting Dr Heather's retirement from the position of Chief Editor, Dr New paid tribute to his dedication and attention to detail. Speaking on behalf of the Society, Dr New thanked Dr Heather for his long and valuable service to the Journal. The tribute was greeted with loud acclaim.

In Dr Monteith's absence, Mr Geoff Thompson spoke to the News Bulletin Editor's report. He drew attention to the improved production methods and standard of presentation, and the consequent increase in costs.

Dr New invited comment on the Business Manager's report. None was offered.

Ms P. Greenslade presented the report of the Conservation Committee, outlining the major projects undertaken and thanking Committee members for their efforts.

Dr I.D. Galloway reported on the first year of activity of the Marketing Promotion Committee. He indicated a need for clearer guidelines for the Committee's responsibilities. The Chairman invited members to contact the Committee to offer any ideas that might aid promotion of the Society and its aims. Mr M. Upton suggested that an illustrated glossary would be a useful adjunct to the revised edition of "Insects of Australia".

The Annual Report of the Executive was adopted on the motion of Mr J.A. Macdonald, seconded Dr A. Clift.

**Announcement of the Winner of the Student Award**

Dr New recalled the decision of the 39th Council Meeting, announced at the National Science and Technology Centre, that the Student Award would be named henceforth "The Phil Carne Prize". The winner of the prize for 1990 was Mr Tim Heard of the DPI Entomology Branch, Indooroopilly, Queensland.

**Announcement of the Winners of the Biological Illustration Competition**

First prize in the colour section of the illustration competition was awarded to Ms Georgina Davis (TAS) and the winner of the black and white section was Ms Genevieve Wallace (NSW). Second prize in both sections was awarded to Ms Penny Johansen (NSW). Dr New thanked Dr I.D. Naumann for coordinating the judging of the competition. The winning entries are on pages 117–120.

**Announcement of Recipients of Australian Entomological Society Research Grants**

Dr New reminded members of the simple procedure to apply for research grants. He particularly invited those members who would not normally have access to research funding to make application.

The following 3 grants were announced in addition to those published in November and the President presented the recipients with their cheques:

Dr Robyn Gunning, $400 contribution toward the Ben Hall's Gap invertebrate survey.

Ms Penny Greenslade, $1200 for artwork required to publish coloured illustrations of Collembola.

Dr Christine Stone, $450 in support of a trip to Tasmania for consultation on eucalypt forestry.

**The Mackerras Medal for Excellence in Entomology - 1990**

The President reiterated the announcement made at the Parliament House reception on July 2, that the Mackerras Medal had been awarded to Dr R.A.I. Drew of the DPI Entomology Branch, Indooroopilly, QLD for his work on fruit flies.

**Membership of the Biological Council of Australia**

Dr New briefly outlined the history of the Executive's deliberations concerning membership of the Biological Council of Australia. The Council, to be established under the auspices of the Federation of Australian Scientific and Technological Societies (FASTS), is intended to give the biological sciences a more powerful voice in the political arena. Dr New reported that details of the functioning of the

Council, and precise estimates of cost to the member societies, were still being formulated. Nevertheless it was unanimously agreed at the 39th Council Meeting that this Society would proceed with full membership of the Biological Council for a trial period.

The decision was based on several considerations including:

i) Councillors agreed that a part of the Society's responsibility to members was to promote the political profile of the biological sciences.

ii) That such political activity was best left in the hands of people and organisations set up for that purpose.

iii) That to a large degree, success or failure of the Biological Council would depend on the support of large biological societies such as our own.

iv) That the constitution of the Biological Council provided for much better political representation of the Biological Sciences than did FASTS which was seen to be biased toward the physical sciences.

The decision prompted questions concerning the cost to the Society and the mechanisms for choosing Council representatives. Dr New conceded that much detail remained unclear since the constitution of the Biological Council was still in draft form and the formation of the Council itself was in the hands of a working party of 7. He reiterated that membership was on an initial trial basis and that it was Council's intention to test the value of the Biological Council by seeking support or action in some specific area in due course, rather than by remaining passive. The membership would be kept informed of progress.

**Business Arising from the 39th Council Meeting**

i)Tax deductibility for donations to the Australian Entomological Society Research Grants Account.

The Treasurer briefly summarised the requirements and reported that Council had decided to set up a working party to more fully investigate the rather complex ramifications.

ii) The President reported that Council had approved allocation of the following annual budgets:

| | |
|---|---|
| Chief Editor | $6 000 |
| News Bulletin Editor | $1 000 |
| Business Manager | $1 000 |
| Core Executive (Secretary, Treasurer and Vice President) | $2 000 |

These sums are intended to be used to employ casual staff during periods of peak work load. Payments are subject to Executive approval and external auditing, as is the case for all Society expenditure.

iii) The President reported that Council had approved allocation of an annual budget of $500 to the Conservation Committee to support its activities.

**Announcement of Office Bearers and Councillors for 1990**

The Secretary read the names of office bearers and Councillors nominated for election. As there was one nominee for each vacant position, all were elected to office. One Regional Councillor position in Queensland remains vacant.

| | |
|---|---|
| President | A/Prof Dinah Hales |
| Vice President | Dr T. James Ridsdill-Smith |
| Secretary | Dr Jonathon D. Majer |
| Treasurer | Mr Peter R. Davis |
| Public Officer | Dr Ian D. Naumann |
| Chief Editor | Dr Peter G. Allsopp |
| News Bulletin Editor | Dr Geoff B. Monteith |
| Business Manager | Mr John F. Donaldson |
| Technical Editors | Dr Alan L. Bishop |
| | Dr Graham G. White |
| | Dr Ian D. Naumann |
| Regional Councillors | |
| QLD | Mr Ross I. Storey |
| | Mr Des H. Foley |
| | Vacant |
| NSW | Dr David G. James |
| | Mrs Merilyn Geary |
| | Dr Daniel J. Bickel |
| VIC | Mrs Janet A. Horne |
| | Dr Grant Farrell |
| ACT | Dr Peter Cranston |
| | Dr E. Jane Wright |
| SA | Dr Andrew Austin |
| TAS | Mr Lionel Hill |
| WA | Mr John van Schagen |
| NT | Mr Peter L. Dostine |
| Representative Councillors | |
| Ent. Soc. of QLD | Mr Greg Daniels |
| Ent. Soc. of NSW | Mr John A. Macdonald |
| Ent. Soc. of VIC | Mr Mark M. Hunting |

Members of the incoming Society Council at the Canberra Conference (L to R): John Macdonald, Graham White, Janet Horne, Jane Wright, Alice Wells, Ian Naumann, Pete Cranston, Lionel Hill, Dinah Hales, Peter Allsopp, Grant Farrell, James Rdisdill-Smith, Jon Majer, Greg Daniels, Merilyn Geary, Des Foley.

Dr New thanked retiring office bearers for their contribution to the Society and paid tribute to the continuing valuable service of the Vice President. His sentiments were greeted with applause.

Dr New then stood down as A/Prof Dinah Hales took the chair. A/Prof Hales congratulated Dr New on his presidency, expressing the hope that she would live up to the fine record of those who had gone before and stating her commitment to the continuing prosperity of the Society.

**Report of the 21st AGM Organising Committee**

Dr Joanne Daly reviewed some of the statistics of the AGM. The committee was proud to report that there were 335 full-time registrants, exceeding the previous record by more than 100. A total of 105 papers and 31 posters had been presented. Local and student participation had been particularly encouraged. The Organising Committee had received much cooperation and help from willing assistants.

Dr Daly drew attention to the problems of conflict that may arise if many societies choose the July common week for their conferences. She also commented on the perennial problem of late registrations.

The President paid tribute to the efforts of Dr Daly and her Committee to loud applause.

**Report of the 22nd AGM Organising Committee**

Mrs Janet Horne outlined the plans for the 22nd AGM and Scientific Conference to be held at Melbourne University from July 14 to 19. The rare and endangered alpine stonefly had been chosen as the AGM logo.

Plans for the Conference program were well advanced and session themes included exotic insects of Australia, aquatic insects, alpine insects and insect biogeography, physiology and genetics.

Mrs Horne extended a warm invitation to all present to attend.

**Close**

There being no other business, the President thanked the members for their attendance and closed the meeting at 6.50 pm.

# 21ST CONFERENCE ORGANISING COMMITTEE REPORT

The 21st AGM and scientific conference was held in Canberra on the campus of the Australian National University, 30 June to 5 July. The symbol we chose for the conference was the bogong moth, *Agrotis infusa*, set against the flagpole of the new Parliament House. The moth appeared in various stages of migration on the satchels, windcheaters, mugs and nametags.

This year celebrates the 25th anniversary of the society so it was exciting to see so many people attend the meeting: a total of 344; 221 members, 29 non-members, 69 students and 24 day registrants (by state this was ACT: 112, QLD: 72, NSW: 71, VIC: 42, SA: 20, WA: 14, TAS: 8, NT: 1, Overseas: 4). The scientific program was also large with 110 papers (21 invited, 87 contributed, the student award and Presidential Address) and 33 posters. The large number of contributed papers could only be accommodated with parallel sessions. Many people commented to us that they were pleased with the breadth of entomological subjects covered in a large meeting.

The meeting commenced on Saturday night with registration and an informal social mixer at Burton/Garran Hall. The scientific sessions began on Sunday morning and continued through to Wednesday afternoon. Out-of-town participants were confirmed in their belief that Canberra has dreadful weather in winter; the meeting coincided with the largest number of consecutive days with a maximum under 10°C that Canberra has experienced since records were kept. This might account for the very high attendance at most of the sessions. One of the highlights of the meeting must be the taking of the conference photograph in the pouring rain. With shouts of 'umbrellas up' and 'umbrellas down' registrants managed to smile at the appropriate time. Unfortunately, not all souls braved the weather so the photographic record is incomplete.

There was no single theme to the meeting. Instead, four symposia were organised: 'Insect/Plant Interactions', 'Evolutionary Ecology', 'Molecular Biology' and 'Systematics: Future Directions'. The Systematics symposium was organised and sponsored by the Bureau of Fauna and Flora. After the initial plenary session the systematists divided into eight workshops in which priorities for future systematic research within each order of insects and other arthropods were discussed. Other major topics covered by the meeting were '*Heliothis* Biology' and 'Post-harvest Entomology'.

The poster session was held in conjunction with morning and afternoon tea. The arrangement worked well for static displays and allowed people plenty of time to review each exhibit. The standard of posters was very high. We have two regrets with the poster sessions: firstly, for not giving a prize for the best presentation; and secondly, for not being able to cater for videos and computer displays adequately.

We attracted about $4200 in sponsorship or advertising for the meeting. This was mainly directed to assist student attendance at the meeting. In particular, we thank our major sponsors 'Bureau of Fauna and Flora' and 'Cyanamid Australia Pty Ltd'.

The committee planned two social functions to celebrate the silver jubilee, the cost of which was included in registration. On Sunday night, 330 people attended a buffet meal at the National Science and Technology Centre. Tim Heard was presented his award for the best student paper by Mrs Leigh Carne, widow of Dr Phil Carne after whom the prize has been named. Entries in the Illustration Competition were on display and the winners were announced by Penny Gullan. Ian Naumann launched the 3rd edition of "Directory of Entomologists" (finished only on the Friday before). Five magnificent cakes, each bearing either the society's logo or that of the conference, were then cut. People were free to wander throughout the display areas to play with the exhibits.

On Monday night 320 people attended a cocktail reception in the Mural Room, Parliament House. Participants, resplendent in their best clothes, were barely recognisable. Dr Pat Marks gave an excellent history of the Society covering some of the more controversial issues with which the Society has dealt. The President, Dr Tim New, then presented the Mackerras Medal to Dr Dick Drew.

The fun run was undertaken at lunch time in deference to Canberra's weather. The winners were: Reiks van Klinken and David Cook for the fastest two men, Robin Gunning and Christine Stone for the fastest two women and Margaret Williams for best effort.

The annual dinner was held on the last night of the formal scientific sessions and was attended by a record 270 people. There were a few hiccups with the catering but overall the evening was enjoyed by all; some brave souls

The hard-working Organising Committee for the record Canberra Conference (L to R): Penny Gullan, Tom Weir, Pete Cranston, Jane Wright, Joanne Daly, Paul Wellings, Roger Farrow.

even danced to the music of the bush band. Prizes were awarded for the best presentations of papers: the open section award was shared by Peter Annis (CSIRO) and Mike Keller; the student section went to David Phelps.

Thirty-two people participated in the excursion to an area of temperate rainforest near Braidwood, NSW. A hot lunch in Braidwood, a tour of an historic homestead and an inspection of the experimental area for the CSIRO 'Eucalypt Project' completed the day.

Many people assisted in organising and running the meeting. I would like to thank the rest of the organising committee (Pete Cranston, Roger Farrow, Penny Gullan, Tom Weir, Paul Wellings and Jane Wright) for their efforts. Each person on the committee willingly gave large amounts of their time. It has been a pleasure to share this experience with such a hardworking team. The committee as a whole would like to thank the many Divisional staff such as Sandy Smith and Chris Hunt in Illustration and Judith Hull in Keyboard services who assisted with visual displays and the production of the abstract. Wolfgang Wanjura took many of the photographs during the daytime. George Lutton organised the drinks and nibbles before the AGM. John Dowse and Rex Sutherland assisted with the excursion and other aspects of the meeting. Thanks also go to the various projectionists and those who assisted with registration.

Finally we would like to thank all the participants in the conference for making it scientifically stimulating and just plain good fun.

The Conference Handbook issued to all registrants has abstracts of all the papers given. There are a few copies of this Handbook spare and these are available from me for $2.00.

Joanne DALY
Chair
Organising Committee
21st AGM

Illustration Competition: First Prize, Colour Section **Georgina Davis** (Tas.): *Acanthomurus sp* (COLLEMBOLA)

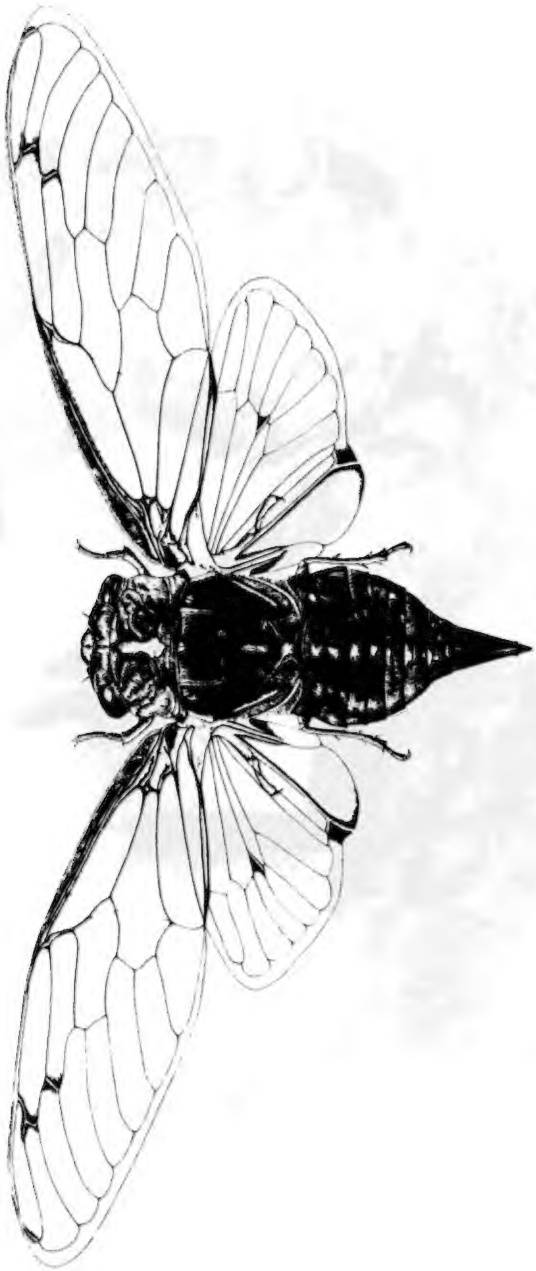


Illustration Competition: First Prize, Black & White Section **Genevieve Wallace** (NSW): *Abricta curvicosta* (CICADIDAE)

Illustration Competition: Second Prize, Colour Section **Penny Johansen** (NSW): *Sceliphron laetum* (SPHECIDAE)

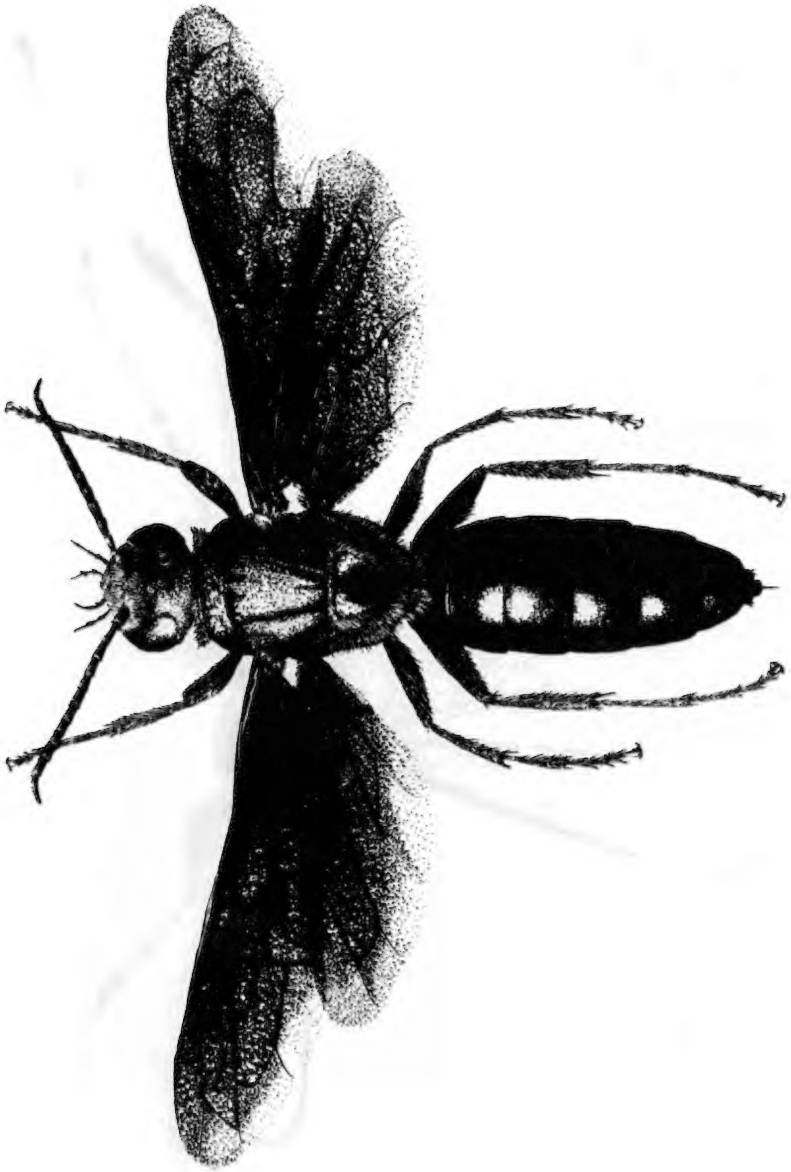
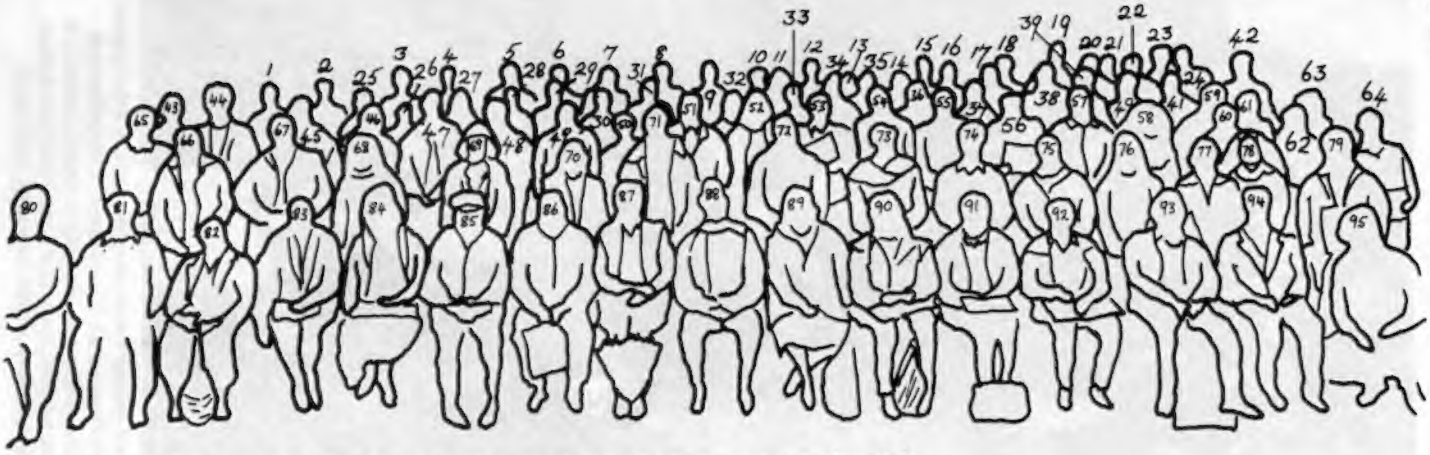


Illustration Competition: Second Prize, Black & White Section **Penny Johansen** (NSW): a tiphiid wasp (TIPHIIDAE)

SCENES FROM THE CANBERRA CONFERENCE: 1.(L-R) Recently retired Murray Upton (CSIRO) and his wife, Keith Taylor, Fred McDonald and Max Moulds. 2. The conference dinner. 3. Adelaideans Janine Lloyd (L) and Lynne Johnson (R) with visitor from Bristol University, Andrea Young. 4. Honorary life member, Dick Norris. 5. QDPI Entomology Director, Merv Bengston, with Rhone-Poulenc's Richard Bull. 6. New President, Dinah Hales (L) with two of her Macquarie University students, Lilian Blanco and Eren Turak.

SCENES FROM THE CONFERENCE: 1. Fun-runners (L-R), David Dall (?), David Cook, Reiks van Klinken and Jon Majer. Reiks and David Cook were the two fastest men. 2. Non-fun runners, John Macdonald (L) and Murray Fletcher, demonstrate alternative wrist exercises. Both hail from BCRI Sydney. 3. Part of the display of collections by amateur entomologists arranged by ANIC. 4. Leigh Carne (L) and ANIC collection manager, Ray McInnes, with the display of her son's collection. 5. (L-R), Max Moulds, from the Australian Museum, Woody Horning, from the Macleay, and Tim Kingston, recently appointed to the Queen Victoria Museum in Launceston.

SCENES FROM THE CONFERENCE: 1. (L-R) Wolfgang Wanjura, Penny Edwards, Shelley Rozario and Roger Farrow at the poster display. 2. At the Parliament House reception were (L-R) Rudy Kohout (Brisbane), Wendy and Richard Bejsak (Sydney) and Wendy and Bob Taylor (Canberra). 3. Penny Greenslade, conservation committee convener, with her poster on Collembola. 4. Eminent orthopterist, Ken Key (ANIC), surveys the illustration competition entries. 5. A pleased Dick Drew (QDPI) with his Mackerras Medal. 6. Neil Heather (QDPI) relaxes after retiring from a long term as Chief Editor. 7. Conference organiser, Joanne Daly, cuts the Society's 25th birthday cake at the Science centre evening. 8. A pleased Matthew and Sally Cahill display larval Charlotte.



## KEY TO CANBERRA GROUP PHOTO ON PP 126-7 (TOP)

1 Peter Smith
2 John Jennings
3 Alistair Drake
4 Michael Storrs
5 Andrew Hobbs
6 Andy Moore
7 Peter Gregg
8 Merv Bengston
9 Stuart McNab
10 David Williams
11 John Osmelak
12 A. Kotze
13 Kaye Hergstrom
14 Libby Bie
15 Alan Clift
16 Len Caddick
17 Neil Heather
18 Duncan Mackay
19 Mike Keller
20 Ross Field
21 Dennis Haugen
22 Gary Fitt
23 Peter Allsopp
24 John Dearn
25 Martin Steinbauer
26 Janet Horne
27 Sue Darby
28 Daniel Papacek
29 Bryan Cantrell
30 Lesley Ballantyne
31 Fred McDonald
32 Di Moyle
33 Mohamed Moukahal
34 Richard Milner
35 David James
36 Judy Staples
37 Cheryl Mares
38 Pat Collins
39 Kevin Walden
40 Junxiong Zhang
41 Mike Hodda
42 James Ridsdill-Smith
43 Dieter Hochuli
44 Paul Wellings
45 Phil Webb
46 Roger Laughlin
47 Matthew Purcell
48 David Hunter
49 Don Sands
50 Joan Bryan
51 Christine Stone
52 Andrea Young
53 David Logan
54 Rieks van Klinken
55 Peter Ridland
56 Steve McKechnie
57 Grant Herron
58 Jenny Ross
59 Roger Farrow
60 Marion Healy
61 Janine Lloyd
62 Frances FitzGibbon
63 (Unknown)
64 Shelley Rozario
65 Marc Coombs
66 Meron Zalucki
67 Mark Westoby
68 Lou Rodgerson
69 Paul Walker
70 Helen Wallace
71 Keith Chandler
72 Daf Kaonga
73 Des Foley
74 Chang Zhen
75 Gina Dillon
76 Cindy Burnett
77 Alice P. Del Socorro
78 Carole Wallace
79 Edi Basuki
80 Graeme Hamilton
81 Philip Weinstein
82 S A Kulkarni
83 Amanda Annells
84 Jenny Fisk
85 Joe Balciunas
86 Mic Julien
87 Jim Cullen
88 David Murray
89 Margaret Williams
90 Lynne Johnson
91 Nancy Endersby
92 Jayanorodana Bandara
93 Roger Lowe
94 Stephen Asante
95 Joanne Daly

## KEY TO CANBERRA GROUP PHOTO ON PP 126-7 (BOTTOM)

1 Wang Qiao
2 Peter Williams
3 Martin Dillon
4 Jonathan Banks
5 John Trueman
6 Martin Rice
7 David Britton
8 Evan Schmidt
9 Peter Lillywhite
10 Graham Milledge
11 Peter Annis
12 Jan van S Graver
13 Stephen Trowell
14 Don Colless
15 Chris Whittle
16 Woody Horning
17 Keith Taylor
18 Lionel Hill
19 John Lawrence
20 Rod Mahon
21 Hugh Paterson
22 Dick Drew
23 Shane McEvey
24 Dennis Black
25 Alan Yen
26 Allan Spessa
27 (Unknown)
28 Bob Eldridge
29 Matthew Cahill
30 (Unknown)
31 Margaret Schneider
32 (Unknown)
33 Max Whitten
34 Robert Whelan
35 Jamie Seymour
36 Bruce Halliday
37 Lance Wilkie
38 Chris Reid
39 Mike Jefferies
40 Greg Daniels
41 Peter Cranston
42 Jonathon Majer
43 Penny Gullan
44 Tom Bellas
45 Courtenay Smithers
46 John Macdonald
47 Dan Bickel
48 Trevor Crosby
49 Richard Faulder
50 John Clancy
51 Peter McQuillan
52 Tim Heard
53 Mali Malipatil
54 David Yeates
55 Geoff Thompson
56 Ebbe S. Nielsen
57 Mira Dumancic
58 Keith Houston
59 Tom Weir
60 (Unknown)
61 Hugh Spencer
62 Marina Hurley
63 Fiona Clissold
64 Keith Binnington
65 Michael Braby
66 Julie-Anne Roberts
67 Tish Silberbauer
68 Endang Sri Kentjonowati
69 Ted Edwards
70 Debbie Kent
71 Max Moulds
72 Alice Wells
73 Andrew Calder
74 Tim New
75 Seamus Ward
76 Ian Common
77 Marianne Horak
78 Murray Upton
79 David Rentz
80 Anne Hill
81 Murray Fletcher
82 Catherine Gilbert
83 Alison Green
84 Dick Norris
85 Glynn Maynard
86 Jo Cardale
87 Ian Naumann
88 Gary Taylor
89 Tony Watson
90 Barry Walbank
91 Barry Moore
92 Mark Collier
93 Michael Schwarz
94 Chris Burwell
95 Suparoek Watanasit
96 Tony Molyneux
97 Dudley Pinnock
98 Supatra Doisopon
99 Robyn Coy
100 Chris Ann Urquhart
101 Ken Fairey
102 Alison Roach
103 Ray McInnes
104 Jan Cristofani
104a M T Chair
105 Richard Bejsak
106 Penny Greenslade
107 Elizabeth Exley
108 Pat Marks
109 S P Kim
110 John Sandow
111 Ken Key
112 Bob Taylor
113 Rudy Kohout

AUSTRALIAN ENTOMOLOGICAL SOCIETY · 21st A.G.M. and SCIENTIFIC CONFERENCE ·
CANBERRA 1990

## CANBERRA CONFERENCE SCIENTIFIC PROGRAMME

(* Invited speakers; for multiple author papers the person delivering the paper is underlined)

### INSECT/PLANT INTERACTIONS

(Organiser Roger Farrow)

* Janet FARR —Plant secondary compounds and insect populations.
* Penny EDWARDS — Induced defences and their effects on insect feeding.
* Gary FITT — Host plant resistance; its future in the management of insect pests.

Z. PENG — The role of catechol oxidase and peroxidase in the gut of the rose aphid *Macrosiphum rosae* in detoxification of catechin in the host plant.

Christine STONE — Influence of cell viability of *Pinus elliottii* billets on the subcortical community associated with *Ips grandicollis*.

Peter ALLEN, Dennis HOPKINS & Peter GIBSON — Sitona weevil and nitrogen fixation by annual medic pasture.

David PHELPS & Peter GREGG — Water stress: effects on curly Mitchell grass, the common armyworm and the Australian plague locust.

L.R. BLANCO & D.F. HALES — Changes in chlorophyll content induced by aphid feeding.

George ETTERSHANK & Jennifer ETTERSHANK — Insects associated with flowers of Tasmanian leatherwoods (*Eucryphia* spp.).

Brigitta FLICK & Hugh SPENCER — Preliminary observations on the visitation of the cauliferous fig *Ficus variegata* at Cape Tribulation, N. Queensland, by agaonid wasps (F. Chalcidae).

Marina HURLEY — Population levels of the dominant folivores on stinging trees (*Dendrocnide* spp.) in north Queensland tropical forest.

Lesley HUGHES — Influence of seed design on the interaction between ants and seeds.

Louise RODGERSON — Seed dispersal by ants on fertile and infertile soils.

Mike HODDA — Responses of termites to changes in food supply in savanna woodland.

Genevieve CARRUTHERS, Roger KITCHING & Margaret LOWMAN — Vertical distribution of arthropods in subtropical rainforest foliage, south-eastern Queensland.

Helen WALLACE, H. VITHANAGE & E. EXLEY — The effect of insect pollinators on nut yield in macadamia.

### STUDENT AWARD WINNER

T.A. HEARD — Pollinator efficiency of cashew flower visitors.

### PRESIDENTIAL ADDRESS

T.R. NEW —'The Doctor's Dilemma': or ideals, attitudes and compromise in insect conservation.

### SYSTEMATICS: FUTURE DIRECTIONS

(Organisers: Barry Richardson and Ebbe Nielsen)

* Max WHITTEN — Future directions.
* Barry RICHARDSON —Why collections and checklists?
* Pete CRANSTON —A case study: Queensland World Heritage area database.

**Systematics Workshops** (conveners)

Non-insect terrestrial arthropods (Bruce Halliday); Coleoptera (John Lawrence); Hymenoptera (Ian Naumann); Lepidoptera (Ebbe Nielsen); Hemiptera (Murray Fletcher); Diptera (Brian Cantrell); Smaller orders (terrestrial) (Tim New); Smaller orders (aquatic) (Alice Wells).

### SYSTEMATICS (contributed papers)

D.J. BICKEL —Distribution patterns of eastern Australian Dolichopodidae (Diptera).

Ting Kui QIN & G.A.C. BEATTIE — The Chinese wax scale (Homoptera: Coccidae) in Australia.

Ebbe NIELSEN —The endemic Australian primitive moth family Lophocoronidae: Taxonomy and phylogeny.

R. BEJSAK — Entomologist contra software.

Robert TAYLOR & Hirotami IMAI —Karyology of Jack-jumpers and other Bulldog ants (*Myrmecia*).

John TRUEMAN — Dragonfly eggshell structures: comparative morphology and function.

Dinah HALES — Genetic studies of cereal aphids in Aust.

### BIOLOGY OF HELIOTHIS

(Organiser: Gary Fitt)

* Myron ZALUCKI — Alternatives to pesticides: res. needs.
* Peter GREGG — *Heliothis* spp. in inland Australia: implications for pest management.
* Kevin WALDEN —Ecology of *Heliothis punctigera* in cropping areas of Western Australia; immigration.
* Joanne DALY, Gary FITT & Jennifer FISK — Ecological factors influencing the evolution of pesticide resistance in *Helicoverpa armigera*.

V.A. DRAKE & G.P. FITT —Studies of *Heliothis* mobility at Narrabri, summer 1989/90.

Andrew HOBBS, Linda KENNAUGH, Dammon PEARCE & Joanne DALY — Contribution of mixed function oxidase activity to pyrethroid resistance in *Heliothis armigera*.

R.V. GUNNING — The prospects for biochemical resistance detection in *Helicoverpa armigera*.

M. COOMBS — Seasonal development and flight performance of *Heliothis punctigera* (Lepidoptera: Noctuidae) on the northern tablelands of NSW.

Allan SPESSA — Reproductive biology of *Helicoverpa armigera and H. punctigera*.

Brad SCHOLZ — The future of egg parasites for *Heliothis* management.

Bob TEAKLE — The role of selective microbial insecticides.

David MURRAY — Diapause strategies in *Heliothis* spp. in Australia.

J.T. HAMILTON & J.A. McDONALD — Egg-based thresholds for the control of *Helicoverpa* spp. on tomatoes.

**POSTHARVEST ENTOMOLOGY**

(Organiser: Jane Wright)

T.A. HEARD, K.K. JACOBI, N.W. HEATHER & P.M. PETERSON — Vapour heat disinfestation of Kensington mangoes against the Queensland fruit fly *Bactrocera tryoni*.

P.C. ANNIS — Controlled atmosphere storage of grain: where are we?

Patrick COLLINS — Is it possible to manage resistance to insecticides in stored grain insect pests?

Barry LONGSTAFF — Some demographic consequences of sub-lethal effects of insecticide for the management of insecticide resistance.

Graham WHITE — Stored grain pest control on farms.

G.J. DAGLISH — Control of bruchids in stored legumes in Queensland.

E. Jane WRIGHT — Detection of insects in grain.

H.J. BANKS — *Reesa vespulae* (Coleoptera, Dermestidae) - a stored product pest new to Australia.

Bob WINKS — Are there really any more mountains to conquer?

Jan van GRAVER — Infestation control in cocoa: some pest and commodity management options in Papua New Guinea.

**ORCHARD ENTOMOLOGY**

Stuart McNAB & Peter JERIE — The effect of twospotted mite (Acari: Tetranychidae) on the flowering, fruit set and yield of the William Bon Chretien pear (WBC) and the tolerance of sensation, a WBC mutation, to twospotted mite.

D.A. MAELZER — Outbreaks of fruitflies in Adelaide from 1948/49 to 1985/86.

S.K. ASANTE — Laboratory rearing, development rates and life table studies of woolly aphid, *Eriosoma lanigerum* Hausmann (Hemiptera: Aphididae).

**WOOD & WOOL PESTS**

Deborah KENT, J.A. SIMPSON & R.H. ELDRIDGE —The biology and ecology of two species of ambrosia beetle (Coleoptera: Platypodidae) attacking heartwood of living *Eucalyptus* species.

Dennis HAUGEN — Woodchip sampling for *Deladenus siricidicola* to predict the infection level in *Sirex noctilio* populations.

Roger TRAYNIER, Roslyn SCHUMACHER & Donna LAU — Wool recognition by the clothes moth, *Tineola bisselliella*.

**EVOLUTIONARY ECOLOGY**

(Organiser: Paul Wellings)

* Seamus WARD — The evolution of host selection in herbivorous insects.

* Win BAILEY — Mate finding: evolutionary constraints on signalling.

* Mark ELGAR — Comparative analyses of life history strategies.

* Michael SCHWARZ — Social behaviour in allodapine bees.

Dennis BLACK — Mating behaviour of two species of bibionid flies.

David COOK — Our current understanding of the mating system of *Lucilia cuprina*.

Paul WELLINGS — Patterns of host discrimination in the aphid parasitoid, *Aphidius ervi*.

Michael KELLER — Responses of the parasitoid *Cotesia rubecula* to its host *Pieris rapae* in a flight tunnel.

Tony WAPSHERE — Phylloxera and *Vitis*: an experimentally testable coevolutionary hypothesis.

H. GU — Genetic covariations between flight capacity and life-history traits in the light brown apple moth, *Epiphyas postvittana* (Lepidoptera: Tortricidae).

John MacDONALD — Pupation in the Australian Pergidae.
Mark ELGAR — Mutualism between psechrid and araneid spiders from Papua Niugini.

**GENERAL ENTOMOLOGY**

Andrew BEATTIE & Duncan VEAL — Ants, antibiotics and national bioresources.
Shelley ROZARIO — Mutualism between eurymelid bugs and ants.
Dieter HOCHULI, Seamus WARD & Gordon SANSON — Functional morphology and wear of mandibles of a graminivorous insect *Mythimna convecta* (Lepidoptera: Noctuidae).
D.A. MAELZER, A.C. LLOYD, D.E. PINNOCK & N. FEATHERSTONE — Bacteria as food for the Queensland fruitfly, *Bactrocera tryoni*.
Philip WEINSTEIN —Leadership behaviour in Pergid sawfly larvae (Hymenoptera: Pergidae).
P. WEBB, R. URECH, P. GREEN, G. BROWN, C. ROBERTS & M. RICE — Automatic experiment controller and data logger for insect behaviour: current status.
Eren TURAK — Performance patterns in *Sitobion* (Aphididae) at different temperatures.
Greg RIPPON & Ross HYNE — Induction of glutathione S-transferase in aquatic invertebrates.

**CONTROL OF INSECT PESTS**

David YEATES, Kingsley FISHER, Andrew SPROUL & Bill WOODS — Queensland fruit fly eradication campaign in Perth, Western Australia, September 1989 – June 1990.
Robert SPOONER-HART & Stephen GOODWIN (presented by Tony Wellham) — Recent developments in integrated mite control in horticultural crops.
M.A. TERRAS — Control of mushroom dipterous pests using *Bacillus thuringiensis israelensis*.
Paul WALKER, Myron ZALUCKI & Peter TWINE — Control of the pink-spotted bollworm, *Pectinophora scutigera*, by mating disruption with synthetic sex pheromone.
Martin RICE — Research on neem-based insecticides in Australia.
Andrea YOUNG & Les STRONG — Does ivermectin deter feeding in fifth-instar larvae of *Pieris brassicae* (L.)?
Keith CHANDLER — Tests for evaluating and monitoring activity of soil-applied controlled release insecticide.
Grant HERRON & Jeanette ROPHAIL — The relative fitness of a hexythiazox resistant and susceptible strain of *Tetranychus urticae* Koch.

**MOLECULAR BIOLOGY**

(Organisers: John Oakeshott and Joanne Daly)
* David O'BROCHTA —Transformation of insects.
* Peter CHRISTIAN — Genetic engineering of insect pathogens.
* Peter EAST —Insect hormone genes in engineered viruses.
Peter CAMPBELL, John OAKESHOTT & Marion HEALY — Characterisation of juvenile hormone esterase in *Drosophila*.
* Valerie BAULE — Genes encoding insect-selective neurotoxins.
* Robyn RUSSELL & John OAKESHOTT — Molecular basis of insecticide resistance.
* Stephen TROWELL & Joanne DALY — A *Heliothis* identification kit.
* J.W.O. BALLARD & P.W. ATKINSON — PCR and molecular systematics.

**BIOLOGY OF PESTS**

Garry McDONALD & Peter COLE — Factors influencing oocyte development in *Mythimna convecta* and their possible impact on migration.
Paul de BARRO & Monique HENRY — The role of refuge areas in the phenology of the bird cherry-oat aphid, *Rhopalosiphum padi* (L.) in the transmission of barley yellow dwarf virus to wheat in the low rainfall wheat belt of South Australia.
Margaret EVANS & Dennis HOPKINS — Biology of the native weevil, *Polyphrades laetus* Blackburn.
Alan CLIFT —Different strategies for dispersion and survival in the two monospecific genera of the tribe Heteropezini (Diptera: Cecidomyiidae).

**INSECTS IN ART**

Agnes BROKERHOF — Disguised as insects: insects as symbols in art.

**BIOCONTROL**

Joe BALCIUNAS —Australian insects as biological control agents for weeds in USA.
Matthew PURCELL & Joe BALCIUNAS — The potential of *Lophyrotoma zonalis* (Hymenoptera: Pergidae) and other Australian sawflies as biological control agents for *Melaleuca quinquenervia*.

Ross FIELD & Sue DARBY — Prospects for classical biological control of the introduced wasp pests, *Vespula germanica* and *V. vulgaris*.

Robert ELDRIDGE —Sirex woodwasp in New South Wales.

Donald SANDS — Banana skipper: a new pest for the South Pacific region.

Anthony CLARKE — History of *Nezara viridula* biological control in Australia.

**MOSQUITO BIOLOGY**

Desmond FOLEY & Joan BRYAN —Biology and behaviour of two sibling species of *Anopheles annulipes* Walker at Griffith, NSW.

Richard RUSSELL & Merilyn GEARY — Might one particular mosquito be responsible for recent increases in dog heartworm disease in southern Australia?

**REPRODUCTIVE PHYSIOLOGY**

Michael LACEY, Peter SMITH & Kathelijne LEFEVERE — Juvenile hormone assay: a multifarious molecular puzzle.

Joan LAI-FOOK — Absorption of phosphorus from the spermatophore by the bursa copulatrix of the skipper, *Calpodes ethlius*.

Keith BINNINGTON & Peter SMITH — A microscopic look into mating blowflies.

David JAMES & Karen O'MALLEY — Aspects of the reproductive biology of *Halotydeus destructor* Tucker and *Penthaleus major* Duges (Acari: Penthaleidae).

**POSTERS**

Roger FARROW & Penelope GREENSLADE — A vertical migration of Collembola.

Letitia SILBERBAUER —Variation in social organisation with nesting substrate in an *Exoneura* species.

P. FLOWER & G.B. MONTEITH — Ant symbiosis in the stems of *Canthium* (Rubiaceae) in Australia.

Penny EDWARDS, Wolfgang WANJURA & Vance BROWN — Within-tree variability in susceptibility of eucalypts to insect attack.

John OSMELAK — The elm leaf beetle *Pyrrhalta luteola* (Muller), [Coleoptera, Chrysomelidae].

Don COLLESS — A new family of Australian Diptera.

Gary S. TAYLOR — Egg morphology and oviposition of some Australian Psylloidea (Homoptera).

K.L. STRONG & R.J. MAHON — An electrophoretic study of geographic variation in *Chrysomya bezziana*.

W.V. BROWN, J.A.L. WATSON & M.J. LACEY — Resolution of termite species complexes using cuticular hydrocarbons.

D.E. EVANS & S.J. BECKETT — A fresh look at the demography of *Oryzaephilus surinamensis*.

S. VISETSON, H.A.ROSE & N. AHMAD — Determination of insecticide residues in the Rust Red Flour Beetle, *Triboleum castaneum*.

Sue DARBY & Ross FIELD — A release program for parasitoids of the introduced wasp pests, *Vespula germanica* and *V. vulgaris*.

R. LOWE & S. WARD — Evidence for a pheromone in the Pea Weevil (*Bruchus pisorum*).

Sarita KULKARNI — Analysis of development rate and related ecdysteroid hormones of *Epiphyas postvittana* (Walk) when reared on Thompson seedless grapes, *Vitis vinifera*.

William FROST & David EAGLING — *Abacarus hystrix* (Nalepa) (Acarina: Eriophyidae) in Victorian pastures.

F. FITZGIBBON — The effects of Woolly Apple Aphid (Hemiptera: Aphididae) density on the growth of potted apple trees.

M. COOMBS & M. RAMSEY — Occurrence of *Heliothis armigera* on the native Monocot: Christmas Bells (*Blandfordia grandiflora*, Blandfordiaceae).

Peter GREGG — Pollen as a marker of origin of migrating *Heliothis* spp.

OFFICERS OF ENTOMOLOGY BRANCH, QDPI — *Heliothis* management into the 90's - a path towards low input sustainable agriculture.

John ROGERS — Prospects for integrated pest management of *Heliothis* spp. on soybeans.

M.L. DILLON & G.P. FITT — HEAPS: A regional model of *Heliothis* population dynamics.

G.E. DILLON & G.P. FITT — Reappraisal of sampling procedures for *Heliothis* spp. in cotton.

Anthony MOLYNEUX — Australian clearance and registration procedures for agricultural and veterinary chemicals.

R.J. MILNER —*Metarhizium anisopliae* as a pathogen of termites in Australia.

Kathy LEFEVERE, Fiona CLISSOLD, Edi BASUKI, Mark COLLIER & Brian ROBERTS —Aspects of hormonal control of development in the Australian Sheep Blowfly, *Lucilia cuprina*.

Marion HEALEY, Mira DUMANCIC & John OAKESHOTT —

The soluble esterases of *Drosophila melanogaster.*

J. ZHANG, H.A. ROSE, A.M. SCRIVENER & M. SLAYTOR — Carbohydrases in two cockroaches, *Calolampra elegans* (Roth & Princis) and *Geoscapheus dilatatus* (Saussure).

Stephen DOGGETT, Richard RUSSELL & David DICKSON — Field and laboratory investigations of Lyme Disease in Australia.

Keith CHANDLER — An insect cage for use with field crops.

Margaret SCHNEIDER & Greg DANIELS — Australian Entomological Magazine.

DEPARTMENT OF ENTOMOLOGY Postgraduate group — Department of Entomology. University of Queensland.

Michael JULIEN & Peter ROOM — Pest status, biology and control of Leucaena psyllid, *Heteropsylla cubana.*

Ian BARRASS, Peter JERIE and S.A. WARD — First and second instar *Pseudococcus longispinus* (Targioni tozzetti), the longtailed mealybug (Pseudococcidae: Hemiptera) carried on wind currents.

**VIDEOS**

Elaine BROUGH, Ian GALLOWAY and Bryan CANTRELL — Best friends: natural enemies (an example of successful integrated pest management).

Bryan CANTRELL, John DONALDSON, Ken HOUSTON and Judy Grimshaw — Hairs, pores and setae too ..... (Microscope preparation of insects and mites).

**TRIBUTE TO AMATEUR ENTOMOLOGISTS** - Australian National Insect Collection, CSIRO Entomology. A display commemorating some of the contributions of amateur collectors to the ANIC.

**SPECIAL INTEREST GROUPS** (conveners)

**Entomology in Education** (R. Spooner-Hart & John McDonald)

**Are Rainforests Diverse?** (P. Greenslade)

**Insect Physiology** (P. Smith)

**Insects & Eucalypts** (R. Farrow)

# Regional News

## WESTERN AUSTRALIA

### Curtin University

Jonathan Majer attended the AES conference and went on to visit Harry Recher at the University of New England to continue work on the tree-insect project. He now anticipates that his globe-trotting will come to an abrupt end following the acquisition of his new duties as Secretary of the Society.

Tony Postle is continuing his survey on invertebrates at the Argyle Diamond mine. He has also commenced working at Curtin as a Research Associate on the tree insect project. Curtin student, Brian Heterick recently drove from WA to Canberra to visit Bob Taylor in order to identify his WA ant collection.

### University of WA

The departure of Heiner Romer to Ruhr University, Bochum, was followed by the arrival of Dr Todd Shelly and family. Todd took up an ARC fellowship for three years to continue work on grasshopper mating systems. He has previously held post-doctoral fellowships at UCLA and Hawaii. Win Bailey is off to a conference in Yugoslavia, on Insect Sound and Vibration, where he hopes to present two new books: "The Tettigoniidae - Biology, Systematics and Evolution", which is co-edited with Dave Rentz, and "Insect Acoustic Behaviour - an evolutionary perspective". These are published by Crawford House Press (Bathurst) and Chapman and Hall (London) respectively.

### Murdoch University

The midge research programme continues for another 12 months. Jenny Davis and her team are now investigating the suitability of the growth regulator 'Sumilarv' to control midge populations. Team member Kerry Trayler has started an Honours project on the effects of sumilarv on non-target invertebrate fauna in wetlands. Other new Honours students are Debbie Kirby, looking at the effects of nutrient enrichment on midge production in experimental ponds on the Murdoch campus, and Keely George who is investigating invertebrate communities associated with fringing reeds in wetlands.

### Conservation and Land Management

Ian Abbott hosted a visit by 2 US professors of entomology, Donald Dahlsten from the University of

California and W. Berisford from the University of Georgia. They visited Janet Farr, in Manjimup, to look at the establishment of *Ips* parastiods.

Ian prepared a report on pest insects recorded in *Eucalyptus globulus* plantations in the south-west of WA, and also gave a seminar on the impact of pest populations of Gumleaf skeletonizer and Jarrah Leafminer on other invertebrates on jarrah foliage.

Janet visited Keith Taylor at ANIC to go through the taxonomy of *Cardiaspina* and found out that the psyllid from the wheatbelt is not *C. brunnea* but a new species. Janet is also looking for operational staff to monitor Gumleaf skeletonizer in the Jarrah forest.

**Department of Agriculture**

War has been declared on locusts and field moths. Staff are helping farmers to prepare for a state-wide assault on predicted plagues this spring. The man in the spotlight is Kevin Walden, who has been planning the programme which involves spray planes and helicopters to hit the worst areas of egg infestation. The last locust plague in WA was in 1981- 82.

Ian Dadour returns to the Waite Institute in Adelaide to finish his post-doc on the population genetics of the cabbage white butterfly. Before this he will spend two days at CSIRO, Canberra, to discuss with Keith Wardhaugh the mass rearing of dung beetles. He will then visit the Australian Animal Health Laboratories in Geelong to look at dung beetle egg sterilization techniques. John Allen spent 3 weeks at AAHL to help out CSIRO who have been contracted by WADA to import 3 species of dung beetles from Spain. These are now being mass reared at South Perth.

Quarantine Entomologist David Yeates and his assistant have been working up a sweat when they visited the Kimberley region in May on a quarantine strategy survey. They spent 10 days on a 50ft charter vessel examining the insects and plant pathogens on the islands and coastline between King Sound and Cockatoo Island. This area is a popular destination for an increasing number of Indonesian *Trochus* shell fishermen. We hope that Dave recovers soon so he can prepare for his 2 year visit to the Big Apple. Dave has received a fellowship from the American Museum of Natural History in New York to work on the higher classification of the bee flies, Bombyliidae.

**Agriculture Protection Board**

Release of sterile Queensland fruit flies has stopped during winter and will begin again in late August for at least 3 months. David Yeates, from WADA, hopes that any overwintering fertile females will meet the large population of sterile males in spring. David delivered a paper on the Q- fly eradication campaign at the AES conference.

The European wasp eradication programme has also slowed down. This year over 100 nests have been destroyed. An APB meeting on European wasp control was held to discuss next year's strategies.

Peter Davis, John van Schagen and their team are now preparing for laboratory trials on the effect of various toxicants and growth regulators on Argentine ant colonies. Some 40 colonies have now been set up in artificial nests to be used in the experiments.

**CSIRO**

Amanda Annells reports that the Red-legged earth mite winter sampling programme is in full swing with the appointment of 3 new technicians.

Jenny Dymock from New Zealand DSIR visited for an afternoon to discuss her work.

**Western Australian Museum**

Terry Houston organised a workshop for the WA Insect Study Group. The topic was the killing and preservation of insects, and it was attended by many amateur insect collectors. The group is still looking for more members.

John Van SCHAGEN
Regional Councillor

## VICTORIA

**Plant Research Institute, Burnley (DARA)**

Professor Nancy Mills, Chairperson of the Genetic Manipulation Advisory Committee, Microbiology Department, University of Melbourne, presented a seminar at Burnley on Thursday, 12 July, Entitled "Procedures for the Release of Genetically Modified Plants", it was well attended.

A successful National Pea Weevil (*Bruchus pisorum*) Workshop was held in Melbourne in May. It was sponsored by the Grain Legumes Research Council, and with the Council's representative, Russell Hilton, was attended by 14 entomologists from CSIRO and State Departments of

Agriculture. Papers were presented on a wide range of topics including field sampling, population dynamics, insecticidal and biological control, plant resistance, crop loss and modelling. Participants were fairly well acquainted and debate flowed freely. The Workshop closed with discussions and recommendations, led by David Evans, CSIRO Canberra, about the directions of future pea weevil research.

The common spotted ladybird, *Harmonia conformis*, was found preying on the aphid, *Tinocallis ulmiparvifolia*, on a Chinese elm in Flemington on 16 May 1990. This is believed to be the first record of this aphid in Victoria.

We have had good attendances at conferences and workshops lately; John Osmelak attended the SCA and CONCOM Workshop on the Introduction and Release of Biological Control Agents, held at the CSIRO Conference Centre, Canberra from the 28-29 June; Paul Horne presented papers on biological control and IPM at the ECO. AG90 Conference in Melbourne in April and the National Potato Conference in Warragul in June; Janet Horne and Bill Frost attended the 31st Annual Conference of the Grasslands Society of Victoria held in Melbourne in June; Peter Williams and Andrew Henderson spoke to entomologists at the CSIRO Stored Grain Research Laboratory, Canberra on June 28 and attended the workshop "Future Directions in Stored Grain Research" the following day. Unfortunately, they couldn't stay in Canberra for the AES Conference; Mali Malipatil attended the Council of Heads of Australian Entomological Collections Meeting held in Canberra immediately after the AES Conference in July.

Peter Williams represented DARA at a meeting of the Australian Wheat Board Working Party on Grain Protectants at the new Academy of Grain Technology, Werribee on 10 and 11 July. The meeting discussed grain protectant requirements and necessary field trials for the grain industry in general, including cereals, grain legumes and oilseeds. There was also some discussion on the use of fumigants and a recommendation was made to the AWB that fumigants be included in the terms of reference of the Working Party. On 12 July, Working Party Members from New South Wales and Queensland visited Burnley for discussions with Peter Williams on fumigation.

Ted Edwards (ANIC) visited the VAIAC, Burnley (Victorian Agricultural Insect and Arachnid Collection) briefly to examine the moths.

CROPWATCH (a division of DARATECH P/L) is holding an IPM Seminar on July 24, and has invited 3 guest speakers: Dr Warren Thomas (DSIR, New Zealand), Dr Colin Bower and Mr Les Penrose (NSW Dept of Agric). Warren will speak about research into, and application of, IPM in New Zealand and also about the organic movement in that country; Colin will speak on one of Victoria's most important apple pests, the dimpling bug, while Les will report on work with apple scab prediction in the Orange and Batlow districts of NSW.

**La Trobe University**

Ian Thorton is overseas at the moment. He has just given a paper at the Fourth International Congress of Systematic and Evolutionary Biologists at the University of Maryland, Washington DC, USA. The paper was entitled "Krakatau — Studies on the Origin and Development of a Fauna".

The "Krakatau Trip" is on again. Tim New, Seamus Ward and Evan Schmidt make up the entomologists who will meet Ian Thornton in Indonesia in mid-August for a month's work.

Michael Schwartz and Tish Silberbauer will be attending the IUSSI (International Union for the Study of Social Insects) International Congress in Bangalore, India, from August 5-11. Michael is giving papers in two symposia on his work on *Exoneura* and Tish will be giving a paper on her PhD work. After the Congress, Michael intends to do some collecting before returning to La Trobe. Dr Penny Cook is returning to Australia in September to begin a two year research project with Michael on the effect of apiarist managed honeybees on the native bee fauna. The purpose of the project is to determine if honeybees are having adverse effects on the native fauna in National Parks. Rounding up the bee news, Tish has successfully applied for a grant from the Royal Zoological Society of NSW.

David Britton gave a successful lecture to the Natural History Network on "The Invertebrates of the Basalt Grasslands West of Melbourne" earlier this month.

**La Trobe University, Genetics Department**

Ross Crozier has arrived from the University of NSW to take up the Chair in the Department of Genetics. He has brought with him a number of post grads, and we are promised more news for the next edition of "Myrmecia"!

**Museum of Victoria: Invertebrate Survey Department**

The Department has had four new temporary staff. Alistair Cameron has replaced Patrick Vaughan on the "Swamps of Western Regions of Melbourne" project and Beverly Van Praagh is employed on the "Giant Gippsland Earthworm Distribution" project. Beverly went to the International Worm Conference in France and presented a paper on the giant Gippsland earthworm. Roger Lowe and Judy Nelson were employed for four months under a temporary employment fund.

Graham Milledge and Alan Yen completed a quick survey of the cave invertebrates in the Buchan-Murrindal region to assist the Department of Conservation and Environment prepare management plans.

**Rural Water Commission of Victoria: Water Quality Assessment Section**

The EPA funded Biological Assessment and Surveillance Network, being undertaken by the State Water Laboratory of Victoria, commenced in May 1990 with 7 weeks of field work collecting aquatic macroinvertebrates and watersamples from 67 sites in 8 river catchments across the state. Glen Sant, after touring Victoria, has decided to continue onto the rest of the country, leaving the Commission after the completion of his 3 month term. The long process of sorting and identification has begun, and the next field event will be in October/November.

**CSIRO: Division of Forestry and Forest Products, Highett**

In May, John French attended the 21st Meeting of the International Research Group on Wood Preservation and the International Union of Forestry Research Organisations at Rotorua, New Zealand. He presented 2 papers: 1. "Termite control in the post-organochlorine era: How do we advise industry and society?" 2. "Subterranean termites of economic importance in suburban Melbourne; wood structures most frequently attacked and damaged". Other termitologists at the meeting included: Mike Haverty, Ken Grace, Laurie Williams, Kuno Tsunoda and Nana Supriana. The meetings considered that future termite control would emphasise physical barriers and termite bait systems.

On 4 July, 1990, John French obtained a Certificate of Accreditation for E.B. Mawson & Sons, Cohuna, Vic., for a granite screenings system for protection of buildings against termite infestation. Details on this system can be obtained from John or Building Control Accreditation Authority of Victoria, 477 Collins Street, Melbourne, Vic.

Don Ewart, late of Melbourne University, leaves Australia on 26th July 1990, to take up a post in the Department of Entomology, University of Hawaii. He will be working with Minoru Tamashiro and Ken Grace on *Coptotermes formosanus*.

**Department of Conservation and Environment: Keith Turnbull Research Institute**

Dr Phillip Spradbury, from CSIRO, visited KTRI during July to study European wasp pheromones.

The elm leaf beetle project is expanding and a scientific officer is due to be appointed in August.

David McLaren has been promoted and is working on biological control of ragwort.

John Weiss has been appointed and is working on biological control of horehound. This project also received a boost with the news that the Australian Wool Corporation is going to fund the overseas exploration for insects that attack horehound.

Tom Morely has been appointed and is working on biological control of Paterson's curse.

Emmily Sheffield and Frank Dorber have been appointed as technical assistants on biological control of ragwort and elm leaf beetle.

Robin Adair and Penny spent 2 eventful weeks in Nepal dodging bullets and riots while on their honeymoon!

Janet HORNE and Grant FARRELL
Regional Councillors

## AUSTRALIAN CAPITAL TERRITORY

**CSIRO Australian National Insect Collection**

The staff of the Taxonomy and General Biology section are recovering from their efforts during the Annual meeting. There were many visitors to ANIC during the meeting - too numerous to mention in this report. Our visitors will have noticed the expansion of the collections into a third hall. The wait for compactus units has proved fruitless thus far, so the Diptera, Orthoptera and Hemiptera collections were moved a few months ago, without mishap. The Lepidopterists and Coleopterists promptly expanded their area and reduced the height of their stacks of cabinets, providing a suitable display surface for the excellent tribute to Amateur Entomologists organised by Ian Naumann.

Ebbe Nielsen has been travelling again, this time to receive the Karl Jordan medal at the annual meeting of the Lepidopterist's Society. There were a few Institutes around the world that Ebbe didn't visit on the way to and from Milwaukee but they haven't told me. Now the organisation of the imminent Hennig meeting is taking much of Ebbe's time.

A delighted Ebbe Nielsen with the Jordan Medal. The prize also included $1000 cash plus travel costs to the US to receive the medal.

Continuing a career of winter avoidance, Pete Cranston heads for Darwin to work with Charlie Webb on chironomid cladistics and then on to Jabiru to present his report on the midges that survive in the Alligator Rivers.

Sanda McDougall, who has been helping to sort the Christmas Island samples, obtained a first class honours despite her dalliance with rainforest data analysis during her 4th year project on insect abundance in relation to orchard stonefruit interactions. The other students involved in data abstraction during the year did well; perhaps the injection of much needed cash offset the time spent. Data basing is infectious - Mary Carver has become instantly computerate (with the help of Jonathon McCabe, ex-rainforest inventory) and is amassing lots of information on aphid/host/parasites.

Alison Roach, who has been working with Ebbe, has started an ANU Honours course on "The taxonomy and biology of the genus *Anthrenocerus* (Dermestidae) with Penny Gullan, Jonathon Banks and John Lawrence.

John Vranjic, who studies *Eriococcus* on eucalypts in the Botany Department ANU, and Penny Gullan will be attending the International Coccidology Symposium in Krakow, Poland, in August.

Since this is a short report, "Insects of Australia", "Biodiversity", "Cooperative Research Centres" and "Bureaucracy" will be mentioned once only: were that this was true in reality. Finally, Chris Reid submitted his PhD thesis!

**CSIRO Division of Entomology**

To your friendly correspondents, the AGM subsumed all else in the last three months, but life and science did continue in the Division before the meeting. Indeed, some notable events were linked to the AGM. The biological control of weeds section convened a workshop on the introduction and release of biological control agents. Federal and state authorities concerned with proposing and reviewing introductions were invited to attend and discuss procedures for collecting appropriate data, evaluating data, handling applications and approvals, and resolving conflicts of interest.

The Stored Grain Research Laboratory held a workshop on future directions in stored-product entomology, with participants from CSIRO, state departments, bulk handling authorities and the Australian Wheat Board. Bob Winks missed the workshop because he was overseas, discussing the commercialisation of SIROFLO in Germany (where we hear he was wined and dined) and the UK (where he found time to improve his already superb hifi system), and attending a conference in Singapore with Bruce Champ. The section has certainly learned how to craft an effective promotion case, as Bob Winks, Jane Wright, John Sutherland, Peter Annis, Colin Waterford, Steve Wilson and Stephen Beckett all have promotions to show for it.

Brian Fletcher flew to California in April to be a member of a blue ribbon committee to consider the current fruit fly problems in California (particularly whether the current fly infestation in southern California is resident or recently introduced) and to make recommendations to the Californian government on control of medfly and other exotic pests. Max Whitten travelled to the USSR in June to participate in a FAO/UNEP workshop on IPM.

Penny Edwards is preparing for her second overseas posting in South Africa, this time to work on biological con-

trol of weeds, replacing John Scott. Some of us are hoping she'll work in a little time on dung beetles while she's there. Penny has been promoted to principal research scientist.

Murray Upton, entomologist and building manager extraordinaire, has been promoted to scientific services officer class 5, just in time to retire! The new roof (otherwise known as the new lecture theatre) has been named in his honour. Murray is returning as an honorary fellow, and has at least 20 years work all planned out. Top of the list is the revision of the society's manual for collecting insects.

The 'Towards 2000' television crew recently visited the Division to film a sequence on the *Heliothis* virus for a documentary on IPM. Roger Farrow appeared on a Countrywide program concerning planting of eucalyptus trees in the Greening of Australia project. The recent ABC news footage of Tony Watson and Richard Milner with 'green-muscardined' termites was broadcast nationally and to overseas audiences. Although described as the 'Schwarzenegger of the insect world', there is no truth to the rumour that Tony is now the official understudy to a well-known hyper-mesomorphic Hollywood actor.

The molecular biology section has welcomed two new scientists. David Dall is developing a generic technology to modify entomopox viruses, so that they can be used against Coleoptera and Orthoptera. Terry Hanzlik will be working on the coat proteins of insect viruses.

In other news from the molecular group, Keith Binnington is shifting his research focus to host/pathogen interactions. David O'Brochta and Virginia Walker, who were here about 6 months working with Peter Atkinson and Robyn Russell respectively, have both returned to North America.

Ray Akhurst is on the editorial board of a new Academic Press journal called "Biological Control Theory and Application in Pest Management". He reports that the first issue is due in March 1991 and welcomes any enquiries from prospective authors.

Michael Lenz, Sil Runko and Lee Miller of the termite group have been off on their yearly pilgrimage to the north, to install and inspect termite field trials and collect material for next year's work in Canberra. I hear that due to bad management, the barramundi collecting will have to be omitted for lack of time. The long-awaited opus on the Dragonflies of Australia by Tony Watson, Gunther Theischinger and Hilda Abbey is in the last stages before printing. Now what will Tony and Hilda work on on Fridays!

**CSIRO Division of Forest Research**

Cliff Ohmart has returned to the United States after almost a decade as a forest entomologist with the Diovision in Australia. His link with Australia is actually longer than that because he worked for CSIRO on insects attacking radiata pine in its native California from 1977 to 1980 before initially coming to Australia. He is now working as an IPM consultant for a private firm and is involved mostly with almonds and walnuts. His new address is c/- Scientific Methods Inc, P.O.Box 599, Durham, California 95938.

Pete CRANSTON and Jane WRIGHT
Regional Councillors

## NEW SOUTH WALES

### METROPOLITAN SYDNEY NEWS

**Sydney University — Medical Entomology Unit at Westmead Hospital**

Our unit has been busy over the last couple of months with preparation for several conferences appearing to dominate our activities.

During May Richard Russell visited the Health Department of Victoria for discussions on arbovirus surveillance and control programmes, and then left for Manila to undertake a consultancy for the World Health Organisation and conduct a workshop on vector control for Health Department personnel on the island of Guam. While in Guam, Richard attended the Pacific Science Association's Scientific Committee for Entomology Workshop on "Exotic Pests in the Pacific — Problems and Solutions" and presented a paper on "Introduced Vector Borne Diseases in the Pacific". Richard then returned to W.H.O., Manila, and from there went onto Stockholm, Sweden where in June he attended the Fourth International Conference on Lyme Borreliosis with a presentation on the Lyme Disease investigations he is conducting with Stephen Doggett.

Merilyn Geary and Richard are continuing their investigations with seroprevalence of dog heartworm antibody in humans in NSW plus the vector competence of several mosquitoes involved in the transmission of this disease.

Peter Wells and John Clancy have completed processing the mosquitoes from the 1989/90 Arbovirus programme. There have been over 20 mosquito species recorded from

inland NSW and over 40 species from coastal collections throughout the season. 42 virus isolates were recovered for the season, including Sindbis, Ross River and Trubanaman viruses from a range of inland and coastal sites. The 'hordes' of mosquitoes emanating from the late season flooding in the north-west provided an 'exciting' finale to this year's programme, but fortunately their activity was short-lived.

Stephen Doggett is continuing his field work collecting ticks from the north and southern coastal areas of NSW. According to the contacts he has made, this year promises to be 'a good year for ticks'.

Peter attended the Australian Society for Microbiology annual scientific meeting in Launceston in July and presented a paper co-authored with Richard and John on our surveillance of arbovirus activity in NSW; he enjoyed a post-conference 'excursion' to Cradle Mountain before returning.

Dr C.K. Arunagiri from Sri Landa visited to discuss arbovirus research.

**University of Sydney, Department of Plant Pathology and Agricultural Entomology**

Shane McEvey, who is a vice-master of one of the University colleges on campus, is helping out in our understaffed Department with tutoring in some entomology classes. His main entomological interests are in *Drosophila* genetics.

Ken Fairey has just begun his PhD studies in anthelid taxonomy.

Andrew Kotze has been appointed to a position at BCRI, Rydalmere, where he will be trying to outwit the sheep blowfly.

Visitors to the Department included Greg Rippon from the Northern Territory and Robin Gunning and her colleagues from Tamworth all discussing aspects of metabolism of insecticides, especially the role of cytochrome P450 dependent mono oxygenases in polluted environments (Greg) and insecticide resistance (Robin).

**University of New South Wales, CERIT**

Chris Orton has been extremely busy this quarter. In May he visited Samuel Taylor to discuss aerosol testing with Lindsay Showyln. He attended with Jenny Anderson the Australian Institute of Agricultural Science Seminar on Agricultural Education and spoke to the participants on the progress being made by the NSW Entomological Society working party on entomological education. As a member of this working party he met with Professor Don Aitkin (DEET) to discuss the problems and future of entomological education in NSW. He and Jenny Anderson attended the farewell in Biological Science at UNSW for Ross and Ching Crozier. Ross leaves to take up a Chair at La Trobe University.

Martin Shivas and Louise Coady travelled to Fowlers Gap to help Jenny Anderson and Robin Graham with an extensive arid zone sheep blowfly experiment. It rained and rained, the creek came up and it looked as though they would be stuck for months. As Louise had an exam coming up, it was decided that all efforts should be made to get her on her way back to Sydney. She was carried over the flooded creek on the shoulders of a very tall and gallant DMR man and was then driven into Broken Hill with great difficulty. Martin had to get across the creek using his own resources! As all roads to Nyngan were closed, they had to make a round trip via Mildura, but the bus slipped off the road, incurring yet another load of red mud and more hours of delay. The story had a happy ending as Louise made it in time for the exam and passed. Such is the 'arid' zone.

Karen Hudson is in China pursuing non-entomological education and was last heard of travelling towards Tibet. Jenny Anderson gave a talk on flystrike to the Post Graduate Foundation of Veterinary Science at Sydney University in July.

Visitors to CERIT included Hidito Miyoshi, Research Associate, Laboratory of Pesticide Chemistry at Kyoto University, who came to look over the entomological aspects of the 'new insecticides' project after spending a month with CSIRO Chemicals and Polymers. Peter Gregg, UNE looked CERIT over on his way through Sydney and three Agriculture and Fisheries personnel Ian Simpson (Young), Bill Mildrew (Goulburn) and Tom Baz (Orange) spent a day at CERIT videotaping the antics of maggots and doing some interviews for an educational tape to be produced on the control of flystrike in sheep. Dr Peter Krohn, Technical Manager of Bayer and Kate Whitefield visited to look at CERIT facilities, as did Peter Petsul and Professor Geo Crank of Organic Chemistry, UNSW. Wal Lamberth, Deputy General Manager of Unisearch Ltd, came to discuss future projects with Chris Orton. Greg Simpson, CSIRO Chemicals and Polymers Project Leader came to discuss future joint projects. Jenny Dymock DSIR, New Zealand, was shown over

CERIT by Martin Shivas and had talks with Jenny Anderson in Canberra on their respective sheep blowfly research. Lindsay Barton-Browne, Robyn Gunning and George Holan, old friends at CERIT came to discuss various future projects.

**Macquarie University — School of Biological Sciences**

Andy Beattie and his ants have made another TV appearance, this time on the Channel 10 show "Sydney". Andy's team continues to expand, with a new PhD student, Ross Talent, working on mathematical models of extinction, and a new Masters student, Jane Trimble, studying the antibiotic properties of ant metapleural secretions. Ian Oliver (former Honours student) has been appointed as Professional Officer, studying genetic consequences of seed dispersal by ants.

The Hales brigade welcomes back Jenny Harry, who has just completed her PhD on sex determination in turtles. Jen will spend a few months with the aphids before taking up a postdoc in the UK. Why is a turtle person working on aphids? That's one of the great things about the School of Biological Sciences; we are very versatile. PS. it's the sex determination part that's relevant.

Dinah has had two exciting field trips - one up in the mists of Mt Tomah with Noel Tait (on one of his many onychophoran trips), and another crawling through drain pipes and mud on campus with Dennis Black (La Trobe) in search of the previously elusive freshwater millipede. What luck that it belongs to the group Dennis is working on. What bad luck that the Graduate School of Management is going to destroy the site.

David Briscoe, Dick Frankham, Gabrielle Smith and co-workers from the University of New England and from Spain have estimated the effective sizes of several large cage and bottle populations of *Drosophila*. The disturbing answer is that effective sizes are only a few percent of census sizes. This has important applications in stock maintenance and conservation genetics, as populations lose genetic variation at much greater rates than previously imagined.

**Army Malaria Research Unit**

The past three months have been busy. In May the unit continued its survey for the sibling species of the potential malaria vector *Anopheles farauti* s.l. in northern Australia. They were based at Daly River Police Station, NT, and were able to survey a large area using an Army helicopter and four wheel drive vehicles. Over 1000 *An. farauti* adults were collected from 50 sites scattered throughout north western NT, including Bathurst and Melville Islands. The unit members were again grateful to Peter Whelan, Paul Barker-Hudson, Wendy Kelton and Graham Dobson of the Medical Entomology Branch, NT Department of Health, who provided information concerning their previous studies in the survey region. The unit staff were assisted during the survey by members of the Army Reserve, which included Darren Waterson from the Forestry Commission.

Prior to departing for Daly River, Bob Cooper spent a few days at Nyngan assessing the pest mosquito populations and advising on control for the flood relief Emergency Services personnel.

Steve Frances has just returned from an informative visit to the USA. During a two week period Steve visited the Entomology section of the Walter Reed Army Institute of Research, Washington, DC, and the Insects Affecting Man and Animals Research Laboratory in Gainesville, Florida, for discussions concerning insect repellants and toxicants.

Tony Sweeney and other unit staff are currently preparing for the 4th International Colloquium for Invertebrate Pathology, which is to be held in Adelaide during late August. It is expected that several overseas scientists will visit the unit prior to or after the conference.

A recent visitor to the unit was Emeritus Professor C.R.B. Blackburn, who was a member of the LHQ Medical Research Unit, Cairns (a forerunner of AMRU), during World War II. Prof Blackburn presented an informative talk on the war time activities of this unit, and also passed on some of his vast knowledge of research on malaria. Peter Atkinson from CSIRO, Canberra, also visited the unit during May and discussed mosquito rearing techniques with Bob Cooper.

**Australian Museum**

World famous homopterist, former Director of the Australian Museum, and Honorary member of our Society, John Evans, passed away on July 15 and a private funeral was held on July 18. A memorial service was held at the Museum on August 2 to honour the man widely acclaimed for initiating the successful modern era of the Australian Museum. Our sympathies go to his wife, and fellow homopterist, Faith, at her loss. An obituary will appear in the next "Myrmecia".

Congratulations to Max Moulds at being awarded the Royal Zoological Society's Whitley Award for excellence in

natural history publishing for his book "Australian Cicadas".

Geoff Holloway is steadily improving and will shortly be transferred from St Vincents to a hospital nearer his home in Sutherland.

Recent storms have brought home the problems of the Entomology Section's perennial problem: a leaky roof! After many attempts to have it repaired, we hope that now it will be permanently fixed.

David McAlpine and Dan Bickel will both be attending the 2nd International Diptera Congress in Bratislava, Czechoslovakia in late August. Both also plan to visit various museums while in Europe. David will fly back to Australia via Zimbabwe and South Africa where he hopes to get more specimens of his new family of Acalyptrates as well as (you might have guessed) new species of upside-down flies.

Max has been labouring tirelessly, and with the help of Barry Day, has totally re-arranged the Entomology Section Library. Now they are shifting their focus to the collection. Dust will fly.

Shane McEvey has been busy curating the Museum's Drosophilidae holdings and incorporating the Bock Collection. Gerry Cassis arranged a well-received workshop at the Museum on the Biogeographic Component Programme, conducted by the author, Rod Page (who flew over from Auckland). Interested persons from other institutions in Sydney and Canberra also attended.

Merilyn GEARY and Dan BICKEL
Regional Councillors

## NEW SOUTH WALES COUNTRY AREAS

### NSW Agriculture & Fisheries, Yanco

Visitors to country institutions such as Yanco are fairly infrequent, which is a fact probably not well understood by city-based entomologists. We therefore often miss out on the intellectual stimulation that meeting someone with similar research interest often brings. Such stimulation is vital to development and maintenance of effective entomological research. Thus, the annual gathering of entomologists from far and wide is eagerly awaited each year by far-flung scribes such as myself! The coldest days of the year in Canberra were very stimulating and we have all returned to our research tasks with renewed vigour!

David James had useful discussions at the conference with other workers at the conference currently investigating the mysteries of red legged earth mites. Peter Allen, James Ridsdill-Smith, Amanda Annells, and Bill Frost are all involved in industry funded research on RLEM.

In early June, David trekked north to Nambour, Queensland to collect *Pristhesancus plagipennis*, an assassin bug predator which appears to be a useful natural enemy of spined citrus bug. David called in on Dan Smith and also visited the Entomology Branch at DPI in Indooroopilly, and Department of Entomology at University of Queensland.

Mark Stevens has recently received funding from the Rice Industry and the Australian Special Rural Research Council for research into invertebrate pests of rice and their management. A new Technical Officer will be recruited to assist in this research and will swell the entomology ranks at Yanco to 9.

### NSW Agriculture & Fisheries, Tamworth

Robin Gunning and Margie Balfe spent a week at the University of Sydney in mid July working on the biochemistry of insecticide resistance.

### NSW Agriculture & Fisheries, Wollongbar

Neil Treverrow spent some time in late June at CSIRO in Canberra discussing entomopathogenic nematodes with Robin Bedding. Lucky Neil has chosen a warmer destination for July, visiting Tonga mid-month to discuss those nematode things with researchers in that country.

### NSW Agriculture & Fisheries, Orange

A meeting of those involved in a Horticultural Research and Development Cooperation (HRDC) funded project to commercialise some aspects of integrated mite control in apples was held at Richmond in late May. Graham Thwaite and Col Bower (Orange) organised the review of the 1989/90 season in collaboration with host Rob Spooner-Hart, Associate Dean of the Faculty of Horticulture at the University of Western Sydney-Hawkesbury. Frank Page and Peter Nimmo, Queensland DPI Applethorpe, made a valuable contribution. The consultants from Applethorpe, Batlow, Orange and Richmond exchanged their "trade" information and returned to their respective centres ready to service their clients with renewed enthusiasm!

Meanwhile, the word at Orange is that a four state investigation of apple dimpling bug, *Campylomma livida*, has been funded by HRDC. The bug feeds on apple blossoms and causes malformation of the fruit. Dave Williams (Victoria), Bill Woods (Western Australia) and Frank Page (Queensland) will work with Col Bower to find out more about the pest.

**NSW Agriculture & Fisheries, Narrabri**

Ken Brook has resigned from the CSIRO Cotton Research Unit at Narrabri and will be joining the Soil Conservation Branch of the Queensland DPI at Indooroopilly, Brisbane. Ken's wife Carol, will continue to service the SIRATAC pest management program for cotton, from her home in Brisbane.

Neil Forrester chaired the inaugural meeting of the IOPERM (International Organisation for Pesticide Resistance Management) Cotton Working Group in New Orleans in April.

The Summer Crops Insecticide Resistance Management strategy will incorporate 2 minor modifications for the next season. The endosulfan window will close one week earlier (in line with the pyrethroid window) and it will be recommended that the synergist piperonyl butoxide be added to the 2nd pyrethroid spray. These changes were decided at a joint meeting of researchers, consultants, grower organisations and the agrochemical industry, held at BCRI, Rydalmere, in mid- July.

**Unattached**

Geoff Williams at Lansdowne, near Taree, reports that a proposal he submitted to the Australian Heritage Commission in 1987 for national estate listing of the Lansdowne-Comboyne escarpment has been successful. It encompasses some, if not most, of the relic rainforests remaining from heavy clearing of the Comboyne Plateau last century. The area contains an extensive list of plant and vertebrate species that are endangered. Much of the biological interest in the region centres on the invertebrates and these formed much of the basis for the proposal. A number of type localities for Diptera, Coleoptera and Hymenoptera are included in the region listed.

David JAMES
Regional Councillor

## SOUTH AUSTRALIA

**Department of Agriculture**

Peter Allen has been temporarily reassigned to the Quarantine Section of the Department for three to four months to implement organisation changes in that area. Peter attended and presented a paper at the AGM in Canberra, and stayed on after the conference to attend several meetings on quarantine issues. Greg Baker attended a Pea Weevil Workshop in Melbourne in May, and was a key participant in the Workshop Programme. Dennis Hopkins and Mark Newton travelled through Victoria and New South Wales in May to collect a range of native snails to be used in host specificity tests for the introduction of a parasite for white and conical snails in South Australia. Dennis also travelled to Perth in June and spent time with Peter Davis collecting native snails from south-west Western Australia. Peter Bailey also joined Dennis and Mark on their Victorian trip to collect parasitic nematodes of native millipedes for use in his research project on the introduced black Portuguese Millipede. Dr Jenny Dymock, DSIR, New Zealand, paid a brief visit to the Northfield Research Laboratories in July to discuss the European Wasp situation in South Australia with Dennis Hopkins, and Argentine Stem Weevil with Gabriella Caon. Dennis Hopkins attended a Workshop entitled "Introduction and Release of Biological Control Agents" in Canberra on 28th and 29th June.

**South Australian Museum**

The most important news is that after 43 years at the Museum, Gordon Gross plans to retire on the 3rd of August. He will still be coming into work in an honorary capacity, and will be quite willing to identify bugs, but will be happy to be free of an obligation to deal with general entomological queries. He escapes just as the Board is asking for detailed annual reports on the status of loans, so that curators and any clients who happen to be delinquent in their dealings, can look forward to some paper work. Any unsolicited returns of overdue loans will be appreciated. Jan Forrest and David Hirst took a collecting trip in May to northern Eyre Peninsula and noted distinctive aspects to the sandhill fauna. Archie McArthur, retired from farming, is working regularly on sugar ants (*Camponotus*), trying to distinguish them by their hair pattern. Otherwise it's been a quiet quarter.

**Department of Zoology, University of Adelaide**

Shelley Barker is currently hunting for buprestids in the northwest of Western Australia. Lynn Johnson, Janine Lloyd and Alice Wells braved the cold of Canberra, for the Ent. Soc. congress at which Alice convened a workshop on "Future directions for taxonomic research on 'Minor orders (Aquatic)'".

**Department of Entomology (Waite Institute), University of Adelaide**

Virtually the whole staff of the Department attended the Canberra conference and delivered between them 8 papers and posters. The number of head colds that returned attested to the Canberra weather and a good and productive time by all. The insect pathology group, headed by Dudley Pinnock, is now in the final hectic stages of organisation for the Vth International Invertebrate Pathology Colloquium, which is being held in Adelaide in late August. With a final registration of over 200 with 170 international delegates, this conference will undoubtedly dominate entomological activity in Adelaide for quite a while.

Gary Fitt from CSIRO Narrabri, visited the Department in mid July as a visiting lecturer, and spent four days in discussions with staff and postgraduate students. His Waite Institute seminar on the movement and management of *Heliothis* moth in northeast NSW was well received and resulted in prolonged question time. Also John McKenzie, Department of Genetics, Melbourne University, visited the Waite briefly and gave a seminar on pesticide resistance and control strategies in the sheep blowfly. Ken Key spent a day examining the orthopteran collection in the Department.

Miss Trudy Thumlert will commence Honours in the Department at the beginning of second semester and will undertake a project with Andy Austin on the biology and parasitoids of the eucalypt leaf-blister sawfly, *Phylacteophaga*.

**CSIRO Divisions of Soils and Entomology**

The most significant event here recently has been the arrival of Bernard Doube from Canberra. Bernard is to extend our current research on earthworms and their influence on soil structure and fertility. He also intends to continue his research on dung beetles, with particular attention to their influence on soils and plant production.

Vicki Barrett has joined the soil zoology group as a technical assistant. Vicki is a zoology graduate from Adelaide University.

Ken Lee, John Buckerfield and Bernard Doube have been travelling overseas. All three attended the 4th International Symposium on Earthworm Ecology in Avignon, France. They also visited several laboratories in France, The Netherlands, Germany, UK and Ireland. Ken Lee is currently away again attending a CAB workshop on the ecological basis of sustainable agriculture in the tropics (in London) and the 14th International Congress of Soil Science (in Kyoto, Japan). Geoff Baker has stayed home, with plenty to occupy him following the arrival of twins!

Visitors to the soil zoology group have included Blair McKenzie (LaTrobe University), Pauline Mele (DARA, Rutherglen) and Max Whitten, Roger Farrow and Jim Cullen (Canberra). Andre Kretszchmar has returned to France after a year in Adelaide.

Andy AUSTIN
Regional Councillor

## QUEENSLAND

### SOUTH EAST QUEENSLAND

**Lands Department, Alan Fletcher Research Station**

Jennifer Marohasy visited the Sudan in June, in search of insects attacking *Acacia nilotica*, and found conditions there primitive and rough even for Jenny. She is currently back in Southern Madagascar for 6 weeks, collecting insects from fireweed, *Senecio madagascariensis*, and shipping them to Brisbane for host-testing in quarantine.

Rachel McFadyen took part in the recent Workshop on Biological Control in Canberra but did not stay on for the AGM - too cold perhaps? Rachel and Allan Tomley will be in Adelaide in August for the Australian Weeds Conference.

**Qld Forestry Service**

Three forestry entomologists; Brenton Peters, Jock Kennedy and Judy King attended the Australian Environmental Pest Management Association Expo held in the Brisbane suburb of Carindale. The expo lasted 2 days and attracted 150 participants, many of them pest controllers.

**Queensland Institute of Medical Research**

Michael Brown and Lynda Muir (QIMR) and Pipi Mottram (State Health Dept) successfully released *Megacyclops aspericornis* into water storage containers on Darnley Island during July for control of *Aedes aegypti* and *Ae. scutellaris*.

Mark Hearnden and Jacqui Coghlan were appointed as field personnel to the QIMR in a study of the management of the Ross River dam in relation to recreation and health. Rhondda Jones and David Blair (James Cook University) and Brian Kay are senior investigators in this study.

**University of Queensland**

The big event for staff and students of the department was the Australian Entomological Society conference in Canberra. Such was the exodus that support staff expressed amazement at how deserted the place seemed! The large contingent made their way by plane, mini-bus, train and car; cool weather on the way provided some of the overseas students with their first glimpse of snow. All-up, 27 delegates associated with U of Q attended and 8 papers and 4 posters were given. Everybody thought the conference a huge success although the following cartoon appeared on the department's notice board soon after.

Gimme Walters is absent from June to December on sabbatical. He is working with Prof. Erki Hajiauki (University of Turku, Finland) on the sex ratio of sawflies on beech trees.

**CSIRO, Long Pocket**

Bob Sutherst on a recent overseas trip, visited ICIPE in Kenya for a meeting of the governing council, then FAO in Burundi on a consultancy and then Britain for 1 month working with Dr Geoff Norton.

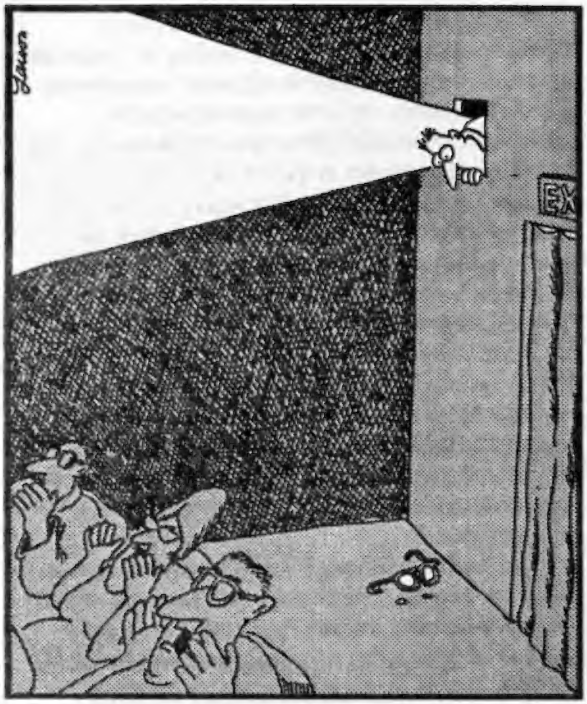
Rob Floyd started a 2 year project with Biotechnology Australia and BobSutherst's group investing the application of the new tick vaccine using a cattle tick model.

Wendy Forno and Don Sands attended a AQIS/ANPWS workshop in Canberra in late June on importation and release of biological control agents for insects and weeds.

Tony Wright visited Thailand in mid July to take a colony of *Neochetina bruchi* to the National Biological Control Research Centre for the biological control of water hyacinth. This is the first visit of a 3 year ACIAR project on biological control of water hyacinth.

Wendy Forno visited the CSIRO field station at Vera Cruz in Mexico in July. Besides collecting Montezuma's revenge Wendy also collected a weevil, *Chalcodermus serripes*, for biological control of *Mimosa pigra*.

Don Sands spent 3 days on Norfolk Island evaluating the performance of biological control agents against white wax scale (*Gascardia destructor*) on citrus.



**"Focus!...Focus!"**

Peter Room received an Honourable Mention for his *Salvinia* biocontrol work in the list of 1990 Rolex Awards for enterprise.

**Griffith University**

Congratulations to Yves Basset whose three years of arboreal antics in the rainforest canopy at Mt Glorious have just paid off with the award of his PhD for his gigantic thesis analysing the results of his insect sampling.

**BSES**

Dave Holdom will be going to Christchurch in August to attend a workshop on scarab pathogens. He will present information on his *Metarhizium* work on cane grubs.

**DPI Entomology Branch**

Brad Scholz (Toowoomba) has been awarded a Churchill Fellowship. Brad has been working for 5 years on aspects of control of *Heliothis* in cotton with mass releases of trichogrammatids. Up to this stage the project has concentrated on selection of the most suitable species. The fellowship will enable him to spend 9 weeks visiting research institutions in the Netherlands, Switzerland, Canada and the USA. He will be looking particularly at methods of mass rearing, releasing, marketing and managing.

A large contingent were at the Annual Conference. Congratulations to Tim Heard, currently a member of the fruit fly disinfestation group at Indooroopilly, who won the Phil Carne Prize for his student research paper.

Merv Bengston, Graham White, Pat Collins and Karin Koch attended the Australian Wheat Board's working party on grain protectants in July. The role of the party has been expanded to include the use of fumigants and also cover all stored grains.

Neil Heather (Indooroopilly) spent a week in July at the USDA workshop on post-harvest horticulture entomology at Newport in Oregon. The workshop specifically concerned with fruit fly disinfestation technology, featured the latest in hot air treatments and attendant regulatory protocols.

Dave Hancock, who has recently spent a year in Surinam as an FAO consultant on a fruit fly problem, has been employed on a new ACIAR fruit fly project. The project aims to introduce protein bait spray control programs in tropical and high altitude temperate orchards in Thailand and also to further extend bait spray programs in Malaysia.

Iain Kay has recently transferred from Ayr to Bundaberg where he will be addressing himself to the implementation of IPM in the tomato industry. The particular difficulty is the management of potato moth.

Judy Grimshaw (Indooroopilly) has just completed 2 weeks of ground surveys in Cape York for the NAQS. Judy has nothing entomological to report but when asked whether she had any close encounters with crocodiles narrated that the only problem was that one had killed a horse in a lagoon near one of her camp sites and stunk the place out.

Elaine Brough (Indooroopilly) recently returned from attending the 39th International Course in Rural Extension at Wageningen. The course focused on agricultural knowledge information systems. A major field study was of the glass-house industries of the Westlands. The industry is compelled to reduce pesticide usage by 50% and is being enforced to implement a closed system of production. A greater refinement of biocontrol techniques is required to produce "perfect" flowers under these constraints. Elaine visited the experimental orchards "DE SCHUILENBURG" at Lieden. An intersting aspect is that because trees are in production for only 12 years their smooth bark limits overwintering sites for codling moth. She was also delighted to run into Bob Ikin at FAO who is developing an IPM project for vegetables in South East Asia.

Dave Murray (Toowoomba) finishing studies on pupal diapause in *Heliothis* spp., has commenced a new project on the evaluation of larval parsitoids for the biocontrol of *Heliothis*. He is particularly interested in *Microplitis* sp.

Noctuids are visiting plagues on the wheat farmers of the central highlands of Queensland. Les Robertson (Emerald) reports enormous populations of *Heliothis armigera* (the one resistant to many chemicals) on wheat and chick pea and armyworms on wheat. The wheat farmers also recently expereinced a few problems with cutworms.

Les is leading a new major project funded by NSCP looking at finding answers to many questions about soil invertebrates in relation to field-crop agreocosystems. The team is particularly interested in the effect of tillage practices. In conjunction with this project Gordon Simpson has recently transferred to Toowoomba to look after the southern area. Gordon has been already seen returning dirty from the fields.

As part of the implementation of IMC and its progression to IPM, Frank Page (Applethorpe) gave a talk to apple growers on strategies for pest management in the future, at a seminar "The Consumer is your Future".

Des FOLEY and Bernie FRANZMANN (Nominee)
Regional Councillors

**NORTH QUEENSLAND NEWS**

John Heraty spent three weeks in the Cairns area searching for eucharitid wasps. Parasites of ants, John collected all life stages of the species he was particularly interested in, making the visit a success. He is heading for southeast Asia after leaving Australia.

Bob Sandry visited the DPI in Mareeba briefly. Bob is setting up a study of insect pests of cashews in the Northern

Territory with advice from Ian Cunningham.

Don Smith (Nambour) and Rod Elder (Rockhampton) toured the north looking at entomological problems in pawpaw, particularly oriental scale (*Aonidiella orientalis*).

Neil Gough (Brisbane) visited the north, helping to run workshops for nurserymen in Cairns and Townsville. Neil was based at the DPI in Atherton and Mareeba early in the eighties, so took the opportunity to renew old friendships.

Judy Grimshaw spent 2 weeks visiting various Torres Strait Islands on a NAQS project looking for insects of potential Quarantine interest. Bruno Pinese and Richard Piper spent a week in Kununurra, attending the First National Banana Symposium. The theme of the meeting was growing bananas in extreme environments.

Kerri Huxham has retired from her coffee entomology - work to take up a nursing training course in Cairns. Good luck Kerri!

Ross STOREY
Regional Councillor

## NORTHERN TERRITORY

**NT Health — Medical Entomology Branch**

Peter Whelan reports that the NT Government has agreed to implement most of the recommendations of a joint NT Govt/Darwin City Council Task Force Review on mosquito control in Darwin. The first step of setting up a Mosquito Control Advisory Committee is now being implemented and Peter will have the onerous task of balancing the needs of competing interest groups.

The Branch has been busy this month with an engineering program and compiling data for the annual report. Paul Barker-Hudston reports a large increase in Ross River cases this year and is trying to track down the locations and is comtemplating reasons for the increase which occurred in spite of a nearly 40% reduction of mosquito numbers in the Darwin area.

Gwenda Hayes, a former trainee in the NT Museum, has been appointed as a technical assistant and is becoming immersed in mosquito identifications. She joins Tricia Fox, a new administration officer, as a welcome addition. Graeme Dobson is coming down with allergic throat reactions to sorting dead mosquitoes and is interested in hearing from anyone having similar problems.

**Office of the Supervising Scientist — Alligator Rivers Region Research Institute**

Visitors to ARRI include consultants to the Resource Assessment Commission, Drs Angela Arthington and Stuart Bunn of Griffith University, who joined ARRRI staff on a tour of field study sites along the South Alligator River in the Kakadu Conservation Zone.

Peter Dostine has just returned from an epic journey to the frozen wastes of southern Austrlia, during which he made a brief visit to ANIC in Canberra to discuss the nature of things with Peter Cranston and Andrew Calder.

**DPIF — Entomology Section**

With the main horticultural production season underway, the Section has been kept particularly busy with field visits, phone enquiries and presentations at open days, schools and grower's meetings. The technical officer position, temporarily vacant whilst Steve Collins is on long service leave, was filled in June by Debbie Van Rangelrooy. The six large experimental crops of kenaf sampled for insects at fortnightly intervals from planting to maturity have now been harvested. Despite the poor growing season, a wide range of insects was collected from the crops. A complex of defoliating caterpillars proved to be the most serious entomological problem. During one sampling, Mike Neal was fortunate not to be injured when a 4WD vehicle and its contents were incinerated whilst Mike was surveying the crop.

Bob Sandary and Wayne Houston forwarded a large sample of *Anigraea ochrobasis*, a leaf roller from cashews, to the CSIRO Insect Pathology Laboratory for pathogen efficacy testing. *Helopeltis australiae* has again been active this dry season on cashews at Wildman River.

Following the development to pest status of three species of bruchid beetles in Queensland mung bean crops over the past two seasons, surveys of this crop and other legume hosts in the NT commenced during May. Samples of potential legume hosts are being collected by Crops, Seeds, Quarantine and Entomology Sections and held for inspection. At this stage it appears that the problem species are not endemic in the NT.

Jaye Layland and Haidee Brown have continued to investigate the attraction of thrips to variously coloured sticky boards and plastic mulches and insecticidal control. The last field trial compared two standard insecticides with an aqueous solution of garlic which a local producer swears

does work!

During a 10 day trip to Alice Springs in June, Stuart Smith and Deanna Chin contacted all commercial horticultural producers in the area and examined a wide range of entomological problems. The main aim was to set up observational trials in date palms and to record established trials on termite control in grape vines. A longicorn beetle would appear to be developing into a significant pest of commercial fig plantings in the area, while larvae of the plain pumpkin beetle *Aulacophora abdominalis* severely infested 40% of an experimental hami-melon crop.

Dr Derek Maelzer of the Waite Agricultural Research Institute in Adelaide visited during May, en route to Kununurra to work on cashew pollination. During his brief stopovers in Darwin, Derek discussed a wide range of entomological issues with the Berrimah staff.

Allan Allwood (now A/Assistant Secretary, Animal Industry Division) and Richard Drew of QDPI visited Fiji, Tonga, Western Samoa and the Cook Islands to develop a proposal on fruit flies in these islands. As a prelude to this study they visited New Zealand to gain first hand knowledge on the attitude of NZ authorities on the quarantine requirements for fresh fruits and vegetables from these islands. The proposal, under the auspices of ACIAR, identifies the need to undertake host fruit sampling and fly trapping to elucidate the species of economic importance to horticulture and to develop protein autolysate baiting techniques for field control. If approved, this project will complement the 3 year project on fruit flies being developed by FAO/UNDP/AIDAB and the SPC.

**DPIF — Weeds Section**

Colin Wilson reports that the most recent recruit in the campaign against *Mimosa pigra* is showing early promise. The moth *Neurostrota* has demonstrated both an appetite for *Mimosa* shoots and a capability to disperse (60 kms within a year following release).

Recent visitors to the Section include Dr Ted Center, USDA entomologist interested in the biological control of aquatic weeds, and Dr Max Whitten, Chief CSIRO Division of Entomology.

**CSIRO — Division of Wildlife and Ecology**

Alan Andersen reports that he is busy compiling the Aust. Ent. Soc. submission to the Resource Assessment Commission enquiry into mining in the Conservation Zone of Kakadu National Park. He recently visited rehabilitation plots at Ranger Uranium Mine during the filming of an ABC Quantum segment on using ants as bio-indicators. Alan will soon be packing his bags to attend the International Union for the Study of Social Insects meeting at Bangalore in India on 6th- 11th August. Alan will be convening the symposium on ant community structure and also presenting a paper on pest ants in Australia.

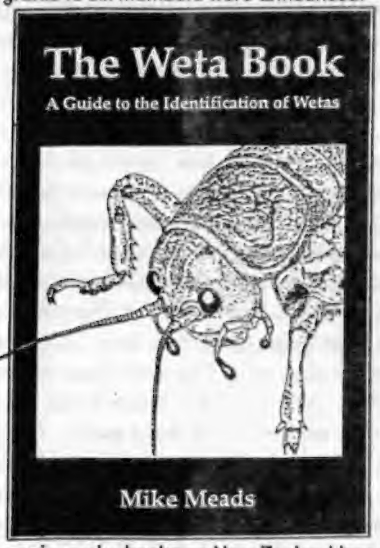
Peter DOSTINE
Regional Councillor

WHEN did the flutterby become the butterfly (Briefs, 14/5)? The day it helped the dragon fly drink the flagon dry. — **MURRAY McFARLANE**, Naracoorte, SA.

# Overseas News

## NEW ZEALAND

The Entomological Society of New Zealand held its 1990 Annual Conference in May at Lincoln University in Christchurch, South Island. This was also an opportunity to celebrate the 21st anniversary of the Entomology Department there and a large attendance of 100 delegates turned up. President Bob Pilgrim handed over to an incoming team comprising Dr G.Hosking (President), Dr B.Barratt (Vice President), Mrs S.Millar (Secretary), Dr R. Scott (Treasurer), Dr A.Heath (Editor) and Mr J.Dugdale (Librarian). Society research grants to six members were announced.




Two semi-popular books on New Zealand insects have just been published and are available at very reasonable prices. The first is by Mike Meads and is called "The Weta Book — a guide to the identification of wetas". This enables identification of the 70-odd species of these famous New Zealand insects. It's available for NZ$6.50 (including postage) from: The Librarian, DSIR Land Resources, P.O.Box 30379, Lower hutt, NZ.

The second new book is "A Guide to the Aquatic Insects of New Zealand" by M.J.Winterbourn and K.L.D.Gregson. This is completely revised from the original 1981 edition and is available for NZ$23.00 (including postage) from: Sales Secretary, E.S.N.Z, DSIR Library, Mt Albert Research Centre, Private Bag, Auckland, NZ.

# News from Affiliated Societies

## ENTOMOLOGICAL SOCIETY OF QUEENSLAND

The most recent meeting of the Society, held in June, was a notes and exhibits night and, as usual, a high standard of displays and talks were the order of the evening, complemented by high attendance.

The meeting congratulated Pat Marks for her Queen's Birthday honour. Pat was made an Officer of the Order of Australia in the General Division for service to Science, particularly in entomology.

Bryan Cantrell presented DPI's latest venture into the video market, with two videos. The first, "Hairs, pores and setae too" deals with microscope preparation of small insects and mites with Judy Grimshaw, Ken Houston and John Donaldson sharing the leading roles. The second video tells the story of the successful application of integrated pest management in citrus in the Central Burnett district of south eastern Queensland. Entitled "Best Friends: Natural Enemies", it stars Elaine Brough, Dan Papacek and Dan Smith. Both videos are available from Entomology Branch, Department of Primary Industries, Meiers Road, Indooroopilly, Qld 4068 for the modest sum of $25 each.

Des Foley spoke of his recent work on genetic evidence for cryptic species within the *Anopheles longirostris* Brug taxon. Electrophoretic results of the enzymes isocitrate dehydrogenase and esterase indicate that two forms coexist around Madang with no hybrids.

Ross Wylie exhibited a number of display cases containing timber and foliage attacking insects.

Mic Julien of CSIRO Long Pocket brought us up to date on the *Leucaena* psyllid, which was first found in Australia in 1986. Mic's display covered the dispersal of the psyllid, attempts to develop resistant strains of the plant, and the search for biological control agents.

The next meeting of the Society will be held on Monday, August 13 at the usual time and venue when Don Sands will speak on "Australia's Endangered Butterflies".

This is most timely as Queensland now has its third protected butterfly species, the lycaenid *Acrodipsas illidgei*. See elsewhere in this "Myrmecia" for more details.

Greg DANIELS Representative Councillor

## ENTOMOLOGICAL SOCIETY OF VICTORIA

The Society is calling for nominations for its annual J.C.("Zoo") Le Souef Memorial Award. This is awarded for contributions to amateur entomology in Australia. Nominations may be made by any individual or body, and should contain sufficient information for the Awards Committee to be able to appraise the contribution made by the nominee. It is not expected that nominations should be excessively lengthy, but documentation (such as publications, if any) on loan would be appreciated. Nominations remain current for three years and should be sent to the Society's Secretary (Dr T.New, Department of Zoology, LaTrobe University, Bundoora, Vic.3083) by 1st November, 1990

## CONSERVATION COMMITTEE

**Quarterly Report March-June 1990**

The Conservation Committee have been pretty busy this quarter. Firstly, the report on the conservation aspects of invertebrates in *Eucalyptus* forests to the Joint Scientific Committee for the South-East forests was completed. Over twenty members of the Society contributed including the four referees, and the final report, which was about 20 pages long, was handed in at the end of June. It has been summarised by a member of the JSCSEF to about half this length and will be included in their final report due to be handed to the relevant Ministers in mid July. We are now preparing submissions to RAC's (Resource Assessment Commission) two inquiries on the Forest and Timber Resources of Australia and Kakadu. Anyone who would like to contribute to either of these submissions, please contact either me (c/o CSIRO Division of Entomology, Canberra) or Alan Andersen for Kakadu (CSIRO Division of Wildlife and Ecology, Darwin).

As part of the Federal Endangered Species programme, the World Wide Fund for Nature, Australia, have established an Endangered Species Network recently opened by the Minister, Ros Kelly in Sydney. Part of this Network is the "National Threatened Species Network Technical Bulletin" to which the Committee has been invited to contribute a 1000 word article on invertebrates to each issue. This is an excellent way of reaching all individuals and organisations concerned with conservation generally but who may know nothing of invertebrates in this connection. The first article, which has just been completed, was a general one but future contributions will deal with particular habitats and/or taxa. If anyone would like to write about 1000 words on an aspect of invertebrate conservation in which they have a particular interest, I would be very pleased to hear from them.

As mentioned in last quarter's news, we are interested in the possibility of registering invertebrate sites as part of the National Estate. The amount of paper and field work involved is considerable and so we have applied for a grant, as part of the National Component of the Heritage Grants Scheme, to employ a project officer to look into this question. Since we are unable at present to run such grants through the Society, we will be running it through the South Australian Museum.

As part of our new representation in northern Queensland, we wrote to the Task Force involved in the review of the proposed Tully-Millstream Hydro-electric Scheme drawing their attention to the conservation needs of the terrestrial and freshwater invertebrates in the area to be inundated.

For the first time ever since I have been convenor, we managed to have a full meeting of the committee at the AGM in Canberra. Although not every member was able to be present, we had proxy's for those not in Canberra at the time. Those present were: Penny Greenslade (Convener), Tim New, Lionel Hill, Jenny Anderson, Rhondda Jones, Jonathon Majer (proxy for Barbara Main), Greg Rippon (proxy for Alan Andersen), Alice Wells (proxy for Eric Matthews). Observers were James Ridsdill-Smith, Dinah Hales, Joe Friend. The items for discussion were 1. The draft policy document for the Committee. This had been prepared by me at the request of the executive and members of the Committee now have it for comment. 2. Contributions to the Endangered Species Bulletin. 3. Contributions to the RAC submissions. 4. The Heritage Grant Application and 5. The Committee budget and how to spend it. As there are now surplus funds because of earnings from the South-East Forest report, it was decided to direct at least part of these funds towards practical invertebrate conservation projects - more of this in the next *Myrmecia*.

Penny GREENSLADE
(Convenor, Conservation Committee)
Australian Entomological Society
c/- CSIRO Division of Entomology
GPO Box 1700
CANBERRA ACT 2601

## PLANNING FOR A CRC BASED IN BRISBANE

Entomologists in Brisbane are exploring the possibilities for enhanced teaching and research through collaboration in one of the 50 new cooperative research centres (CRCs) to be funded by the Federal Government.

The working title for the centre is "The Asia-Pacific Centre for Integrated Pest Management" though an alternative name might ultimately be used. The aim is to capitalise on the wealth of expertise and excellent track record of the 120 entomologists presently employed in 9 separate institutions in Brisbane. the accent will be on pest management in the tropics and subtropics and strengthened links with entomologists working north of Brisbane including Asia and the Pacific.

Human populations are increasing more rapidly in the tropics than elsewhere and there is an urgent need to maximise food production while minimising damage to other life support systems. There are exciting opportunities for new and improved techniques for managing pests and weeds which, by reducing agricultural losses, could help slow the conversion of tropical forests into marginal agricultural land and thereby conserve global water and carbon cycles and biodiversity. Biological control, plant-insect interactions and computer modelling and information management, with emphasis on warm climates, are likely foci for teaching and research by the centre.

Planning is still at an early stage and no firm decisions have made about participation, research directions, centre management etc. so if you have any suggestions, please FAX one of the following: Dr Merv Bengston, QDPI (371 0766), Mr George Diatloff, Q Dept Lands (379 6815), Mr Ted Dahms, Q Museum (846 1918), Prof Hugh Paterson, QU (371 5896), Dr Peter Room, CSIRO (870 7034).

## AWARD OF THE 1990 IAN MACKERRAS MEDAL

The Australian Entomological Society awards biannually the Ian Mackerras Medal for Excellence in Entomology. At the Canberra Conference the medal for 1990 was awarded to Dr R.A.I.Drew of the Queensland DPI Entomology Branch.

Dick Drew is acknowledged as a world authority on the taxonomy and biology of the dacine Fruit Flies, on which he has published some 50 papers in a wide range of Journals. His expertise is reflected in demand for his attendance at national and international meetings and conferences on fruit flies, and he is leader of the FAO's Asian-Pacific Fruit Fly Network. In recent years he has led an important collaborative project between Australia and Malaysia, which is revolutionising fruit fly control measures in Malaysia, and which has led to Dr Drew's Malaysian collaborators receiving a special prize for Scientific Achievement. He has now designed further major initiatives for collaborative development which will benefit both producers and regulatory agencies in Australia and overseas.

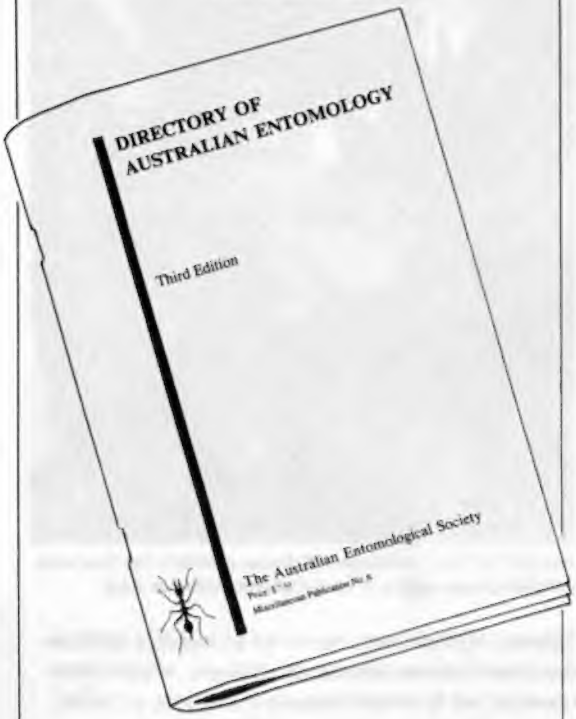
President Tim New (L) awards the 1990 Mackerras Medal to Dick Drew at the Parliament House reception during the Canberra Conference in July.

Dick Drew's taxonomic work is authorative and innovative. His analysis of complex groups of sibling species has required a multi-disciplinary approach combined with a high degree of insight. His biological contributions, with his colleagues at DPI Indooroopilly, include works on associated bacteria, pheromones and control strategies.

He graduated from the University of Queensland in 1966, and received a PhD from the same institution in 1972. Dr Drew is the fourth recipient of the Medal, and the presentation was made at Parliament House, Canberra, on July 2nd.

# NOW AVAILABLE!

## "Directory of Australian Entomology" Third Edition




**The third edition of this valuable guide to Australian entomology was launched at the recent Conference in Canberra. It lists the names, addresses and research interests of 784 entomologists. Cross referencing and indexing of institutional affiliation and research interest make it absolutely essential for all those working in Australian Entomology.**

**Price $7.50 (postage included)**

Send orders to:

**Mr J.F.DONALDSON**
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**Meiers Road**
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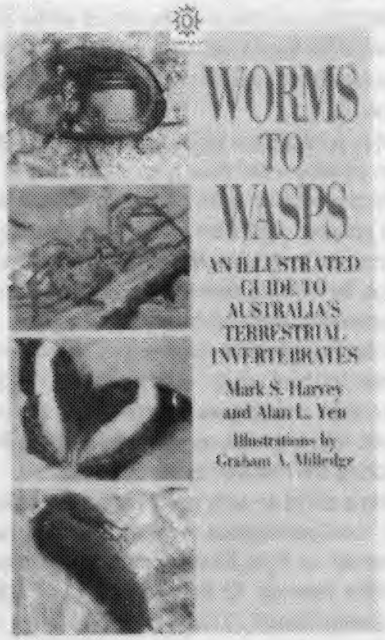
# Book review

*Worms to Wasps. An illustrated Guide to Australia's Terrestrial Invertebrates.* By M.S. Harvey and A.L. Yen 1989. Illustrations by G.A. Milledge. Oxford University Press, Melbourne in Association with the Museum of Victoria. xi+201 pp. Soft cover, R.R.P. $17.95.

"Worms have played a more important part in the history of the world than most persons would at first suppose"




With this characteristic Victorian understatement from his book on earthworms, Charles Darwin in 1881 emphasised the enormous effect that small animals can have on the environment when their actions continue through a long time period. This message can be extended to the invertebrates as a whole, whose diversity and biomass make them far more important in the functioning of natural ecosystems than their backboned cousins. In spite of this, the study of Australian invertebrate Phyla lags far behind the vertebrates, so far so that a large percentage of the species remain unknown to science. "Worms to Wasps" aims to redress this imbalance by increasing our awareness of the terrestrial animals without backbones.

In the introduction the authors state that the book provides an identification guide and notes on each Phylum of Australian terrestrial invertebrates. In essence the book contains identification keys to the Orders of terrestrial segmented worms and arthropods. It does not treat immatures, poorly studied groups such as nematodes, internal parasites of terrestrial animals and microscopic Orders such as the tardigrades. Obviously in a work this size the coverage on those groups treated is brief, with about a page of text devoted to each Order.

A short introductory chapter on classification, collection and study of terrestrial invertebrates is followed by another which defines the terrestrial environment. The dichotomous keys follow with some preamble on their format and scope. The authors provide a key firstly to the nine Phyla and then keys to the Orders of four of these Phyla: annelids (segmented worms), chelicerates (spiders, ticks, scorpions and their relatives), crustaceans (crabs, slaters and lobsters), and Uniramia (centipedes, milipedes and insects).

The keys are relatively simple and often rely on large, obvious characters which means that many specimens can be identified with the naked eye or hand lens rather than a microscope. I found it disappointing that there are no page references in the keys to the relevant text page. It would be handy to be able to flip straight to the text section on the beast you have just identified. The book does not provide keys to Orders of nematodes or molluscs because identification is difficult. However, full page line drawings and text entries are included for each molluscan order.

Following the keys are two facing pages devoted to each Order. On the left hand page is the text briefly summarising the distinguishing features, habitat, feeding and life history, and selected references to the literature. On the right hand page is a full-page line drawing by Graham Milledge of a typical member of the order. These line drawings are accurate and I am sure that specimens will often be identified by comparing them with the illustrations. Where possible, the references selected concern the Australian fauna. I found the sections on the millipedes (Class Diplopoda) and centipedes (Class Chilopoda) most interesting of all. Altogether there are 14 orders of these poorly studied creatures in Australia.

Almost half (twenty six out of sixty six) the Orders treated are insects. Harvey and Yen tread carefully with their generalisations, however it is always difficult to summarise the morphology and biology of diverse groups briefly. I found a few errors in this section, e.g. the authors state that termite soldiers have their heads modified into a rostrum, however the bulk of termite soldiers have normal heads and a rostrum is only found in a couple of genera of Termitidae, notably *Nasutitermes*. Megaloptera pupae are reported to feed, however in reality they can move their jaws but not actually feed. Most hymenopterans are said to have a "waist" between the thorax and abdomen; the waist is actually between the 1st and 2nd segments of the abdomen. Figure 64 incorrectly refers to the labium of a true bug as the stylet and Figure 87 incorrectly labels the reduced forewing of a strepsipteran as a haltere. The final pages contain a glossary and index. The glossary is helpful because it contains some morphological terms used in the text but not explained in the introductory chapters.

Overall, a useful, inexpensive publication which should find its way onto school bookshelves and naturalists' libraries. Let's hope it stimulates a few more minds to turn their attention to invertebrates. When using the book keep in mind that immatures are not treated and the chelicerate you have just keyed out may in fact be a moth caterpillar.

David YEATES
Perth

# Book review

*Moths of Australia*. I.F.B. Common. 1990. Published by Melbourne University Press, 544 pages. $150.

At last Australia has a textbook which does justice to its spectacular heritage of moths. That it has been written by Ian Common, our leading authority on Lepidoptera over four decades, is entirely appropriate - a fitting pinnacle to an outstanding career and a lasting bequest to future students. A lifetime of observation, study and fieldwork all over the continent have been distilled in this panoramic volume. As with R.J. Tillyard's (1926) remarkable "Insects of Australia and New Zealand", it is unlikely that a single author in the future could attempt such a project.

The book is divided into two parts, separated by a cluster of plates and photographs. Part One, "Moths and their environment" both builds a foundation for what follows and stands alone as an authoritative and highly readable

text on lepidopteran biology. In six sections it describes and discusses the structure and bionomics of moths, their population control, economic significance, evolution and classification. While summarising much recent international literature, it has a refreshing bias towards Australian examples to illustrate principles.

Part Two, "The Australian Moth Fauna", conducts the reader through each of the 29 superfamilies in a systematic manner. For each subfamily a preamble discusses the relative size of the Australian fauna and the recent nomenclatural history of the taxon. Then follows a full morphological account of the adult moth and immature stages, supplemented by line drawings of wing venation, male and female genitalia and pupae which are sensibly clustered on one page. Further discussion of the fauna is organised beneath subfamily headings and includes a short diagnosis prior to narrative accounts of selected genera and species, their biological traits, foodplants and distribution.

A photographic gallery of more than one thousand species, about 10% of the named total, adds enormous utility to the book and largely obviates the need for keys to assist identification. Many familiar pests as well as rare esoteric species are represented. Thirty two pages of excellent colour plates and 40 pages of halftones illustrate set and living adults, larvae, cocoons, crypsis, aposematic display and so on. Plate 13 is especially fine. For these, much credit is due to Ederic Slater, whose successful collaboration with the author extends, in my memory anyway, back to 1963 and the "Australian Moths" Jacaranda handbook.

Common is a talented taxonomic artist as revealed by his hundreds of line drawings scattered throughout which add to the continuity of the production.

The arrangement of families in Part Two, derived in collaboration with E.S. Nielsen, will be relatively unfamiliar to most readers but it accurately portrays the large gains in our comprehension of moth phylogeny since publication of "Insects of Australia" in 1970. Similarly, the results of recent work towards a forthcoming checklist of Australian Lepidoptera are reflected in many new and unfamiliar binomials and will assist the book's longevity as a reference. Get used to *Opodiphthera eucalypti* for the emperor gum moth! Equally however, the text highlights the considerable gaps in our knowledge.

Appendix A gives detailed information on how to observe, collect and prepare specimens for further study.

Appendix B is a comprehensive alphabetical list of foodplants, a casual glance of which confirms the preminence of Myrtaceae, Proteaceae and *Acacia* as dominants in the Australian plant-insect interaction.

A reference list of more than 500 entries, a glossary and taxonomic index complete this work.

The book is well bound and beautifully presented with text in 2 column format, although I find the dust jacket gaudy, but striking. It appears free from spelling errors and the only mis-identification I noticed is plate 11, fig. 24 which is not of *Chlorocoma dichloraria* but an undescribed congenor. I also would have preferred the halftone plates to follow directly the colour plates rather than separated by a few pages of text.

There can be no doubt that the progress of popular and professional interest in moths has been hampered until now by lack of access to a comprehensive account of the fauna. This book is an entree to 22,000 species of the Australian

biota which integrate the flora and environment in unique and interesting ways. Though expensive, it can be recommended to a wide audience, both here and overseas.

Peter B. McQUILLAN
Tasmanian Dept of Primary Industry
GPO Box 192B
HOBART TAS 7001

## DISCOUNT OFFER ON "MOTHS OF AUSTRALIA"

"Moths of Australia" was originally released at a price of $125. Just recently the retail price has been increased to $150. However the publishers, Melbourne University Press have made a generous offer to members of the Australian Entomological Society of a 25% discount off the original retail price. This brings its discount price to $93.75. This discount offer will be valid only until the end of October. Members should order the book from the Society. The Society will then place two bulk orders with the publishers, one at the end of September and the other at the end of October. These will be despatched on to members after receipt of the bulk supplies. This means that there may be a delay of up to a month before members receive their order. We will coordinate this at the Queensland Museum. If you can pick your copy up there then there will be no postage charge. If it must be posted on to you then there will be a charge for postage and handling. Complete the Order Form below (or copy) and return it to the News Bulletin Editor at his address inside the front cover of "Myrmecia". Cheques must be made payable to "Australian Entomological Society".

ORDER FORM

Please send me___copy/copies of "Moths of Australia" by I.F.B.Common @ $93.75 each plus, where required, $6.00 post and packing for the first copy and $2.00 additional postage for each extra copy. I enclose payment made payable to the Australian Entomological Society as follows:

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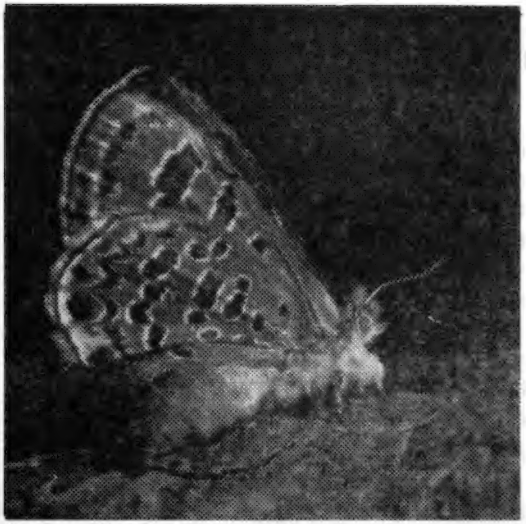
## ANOTHER BUTTERFLY PROTECTED IN QUEENSLAND

The legislation which covers fauna in the State of Queensland is the *Fauna Conservation Act 1974–1989* (and its subsequent amendments) in conjunction with the *Fauna Conservation Regulations 1989*. Under this legislation all "fauna" is protected, but for the purposes of the Act "fauna" is defined as only indigenous birds and mammals plus other species of animals specifically declared to be fauna by government decree. Thus insects as such are not protected by the Act. However in 1974 the Birdwing Butterfly and the Ulysses Butterfly were declared to be officially fauna and have received the same level of protection as native birds and mammals since then.

In 1989 the rare mangrove lycaenid butterfly, *Acrodipsas illidgei* (Illidge's Ant-Blue), was used successfully in legal argument against a development proposal for an area of the butterfly's habitat at Redland Bay on the coast just south of Brisbane. This attracted political attention to the species and, following the change of government in Queensland in November 1989, the new Minister for the Environment proposed that *Acrodipsas illidgei* also be declared protected. This has now come to pass with the announcement in the Government Gazette of July 21 that the species is "fauna". However the same Gazette also announces that the species has simultaneously been declared to be the much more stringent category of "Permanently Protected Fauna"(PPF). This is the first insect to be added to this category which until now has been reserved for about a dozen species of high-profile vertebrates such as the koala, platypus, bilby, paradise parrot, etc.

Special provisions apply to PPF species under Sections 18-21 of the *Fauna Conservation Act* which do not apply to ordinary fauna. Interested persons are advised to acquire a copy of the Act and its Regulations (available from the Queensland Government Printer for about $13.00). A brief summary is given here:

There may never be an open season declared on PPF species (unlike, for example, kangaroos which are just fauna under the Act). Persons in possession of specimens of PPF species at the time of gazettal (July 21 in this instance) have 60 days within which they must notify the Director of Queensland National Parks and Wildlife Service in writing that they possess specimens. The Director may either (i)



*Acrodipsas illidgei* (Photo: Peter Samson)

direct that the specimens be delivered to a fauna officer, in which case, if the specimens were originally obtained legally the owner may be paid a compensation equal to the prescribed royalty for that species, or (ii) grant the owner permission to retain the specimens under a Permit to Keep Fauna, such permits are renewable annually at a cost of $20.00. Fauna held by private persons under the provisions of such a Permit is deemed to be the permanent property of the Crown and under the control of the NPWS. I am advised that amateur collectors already in possession of *Acrodipsas illidgei* on July 21, and who declare them prior to September 19, will be granted the option of keeping their specimens under this form of Permit. There is no opening for the Permit Fee to be either reduced or waived because the amount of $20 is specified in the legislation. An individual Permit to Keep Fauna will cover one or many specimens, provided they are all declared before the 60 day deadline and are demonstrated to have been obtained legally. The Permit to Keep specifies the premises at which the specimens are to be housed. Separate Permits (at a cost of $10 each) are required to allow movement of PPF to different premises within the State or for the movement of PPF into or out of the State. Specimens not in Queensland at the time the species was gazetted are not subject to the Act, nor are specimens not collected in the State of Queensland. Maximum penalties specified in the Act for illegally collecting PPF are "200 penalty units or 2 years imprisonment or both" and for illegally possessing PPF are "100 penalty units or 12 months imprisonment or both". Naturally provisions exist in the Act for the granting of permits to collect and study PPF for scientific purposes. Possessors of specimens should also be aware that there is the possibility of gaining taxation concessions with respect to specimens donated to a public museum under the Taxation Incentives Scheme but presumably this would have to be negotiated before the 60 day deadline after which specimens would be deemed to be illegally held.

Please don't "shoot the messenger"!

Geoff MONTEITH
Queensland Museum

*Specimen*

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# Coming Events

## 19TH INTERNATIONAL CONGRESS OF ENTOMOLOGY

The next International Congress will be held in Beijing, China, during the period June 28 - July 4, 1992 and is sponsored by the Entomological Society of China. The first announcement brochure has now been circulated and the second announcement brochure will be sent in March 1991 to those who have lodged their names with the Secretariat. To obtain the first announcement please write to: Prof. Z.I.Zhang, Secretary-General XIX International Congress of Entomology, 19 Zhongguancun Lu, Beijing 100080, CHINA. Tel: (861)2563011. Fax: (861) 2565689. Telex:222337 ICCST CN.

## 17TH PACIFIC SCIENCE CONGRESS

XVII PACIFIC SCIENCE CONGRESS

Towards the Pacific Century: The Challenge of Change

Will be held in Honolulu, Hawaii on May 27 - June 2 1991. Major symposia include: Global Environmental Change - Pacific Aspects; Population, Health and Social Change; Science and Culture; Biological Diversity; Emerging Technologies and Development; Frontiers of Physical Science: New Technological Advances and Pacific Science.

## 8TH INTERNATIONAL SYMPOSIUM ON BIOLOGICAL CONTROL OF WEEDS

To be held at Lincoln University, Christchurch, New Zealand, during the period 2-7 February, 1992. Information is obtainable from Ms P. Syrett, DSIR Plant protection, Private Bag, Christchurch, N.Z.

## 11TH INTERNATIONAL SYMPOSIUM ON CHIRONOMIDAE

This meeting will take place at the University of Amsterdam, the Netherlands, on 12-14 August, 1991. Contributions are expected to cover the whole field of research on the midge family Chironomidae including ecology, environmental changes, pollution, water quality, ecotoxicity, physiology, biochemistry, taxonomy and systematics. The Proceedings will be published. To receive the comprehensive second circular write to the following address:

11th International Symposium on Chironomidae
Conference Office
University of Amsterdam
Spui 21
1012 WX Amsterdam
The Netherlands

## 22ND AGM AND CONFERENCE OF THE AUSTRALIAN ENTOMOLOGICAL SOCIETY

Our next meeting will be held in Melbourne 14-19 July, 1991. Further details will be included in the November issue of "Myrmecia".

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## 2ND INTERNATIONAL WORKSHOP ON LOWER LEPIDOPTERA

The 2nd International Workshop on Lower Lepidoptera will be held 22-25 March 1991 in Canberra, Australia. The program will include a series of review papers and short research reports. Contributions will include taxonomy, phylogeny and classification, biogeography, morphology and anatomy, ultrastructure, molecular taxonomy, general biology, palaeontology and systematic methodology.

The meeting will take place at the CSIRO Division of Entomology which also houses the Australian National Insect Collection.

An account of the first meeting in this series is given in *Antenna* 14(2): 84-85 (1990) by N.P. Kristensen.

The registration fee will be approx. A$100 and reasonably priced accommodation will be provided. Anyone wishing to receive further information and to offer contributions to this meeting, should write to: Ebbe S. Nielsen, CSIRO Entomology, GPO Box 1700, Canberra ACT 2601, Australia; telephone (06) 245 4258; fax (06) 246 4264.

## ECOLOGICAL INTERACTIONS

The Biological Symposium of the Ecological Society of Australia will be held at Melbourne University during the period 25-28 September, 1990. The first two days will be devoted to papers on the symposium theme and the second two days will be available for general contributions. Registration fee is $65 ($20 for students). Obtain details and enrolment forms from: Dr Gerry Quinn, Department of Botany and Zoology, Monash University, Clayton, VIC 3168.

# CSIRO JOURNALS SUBSCRIPTION FORM

**CONCESSION RATES FOR MEMBERS**

Members are reminded that membership of the Australian Entomological Society entitles them to subscriptions to Journals published by CSIRO at substantial concessions. If you wish to subscribe to one or more of the Journals listed, please tick the appropriate boxes on the adjacent form and forward it to the Treasurer with the correct money by 30 November. Cheques should be made payable to the Australian Entomological Society.

One of the reasons for Societies being offered concessions is that it reduces paperwork (and therefore costs) if CSIRO receives one large order rather than many small ones. For this reason please ensure that your order is sent to the Treasurer on time. While CSIRO have generously allowed concession prices to apply even on late individual orders this year, it does negate the advantages of them providing bulk concessions and they may not allow it in future.

Members are reminded that back issues of all Journals are available from CSIRO Publication Sales at a cost of $30 each.

This Society acts only as an agent for the CSIRO Publication Sales Office. We are not involved in setting prices, puiblishing the Journals or sending them out to subscribers. While the Treasurer is happy to pass on complaints to the appropriate people it will be more expedient if members who have problems with non-receipt of Journals communicate directly with:

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CSIRO Publication Sales
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| Australian Journal of Botany | $160 | $80 | ☐ |
| Australian Journal of Chemistry | $370 | $190 | ☐ |
| Australian Journal of Marine and Freshwater Research | $160 | $80 | ☐ |
| Australian Journal of Physics | $215 | $80 | ☐ |
| Australian Journal of Plant Physiology | $160 | $80 | ☐ |
| Australian Journal of Soils Research | $160 | $60 | ☐ |
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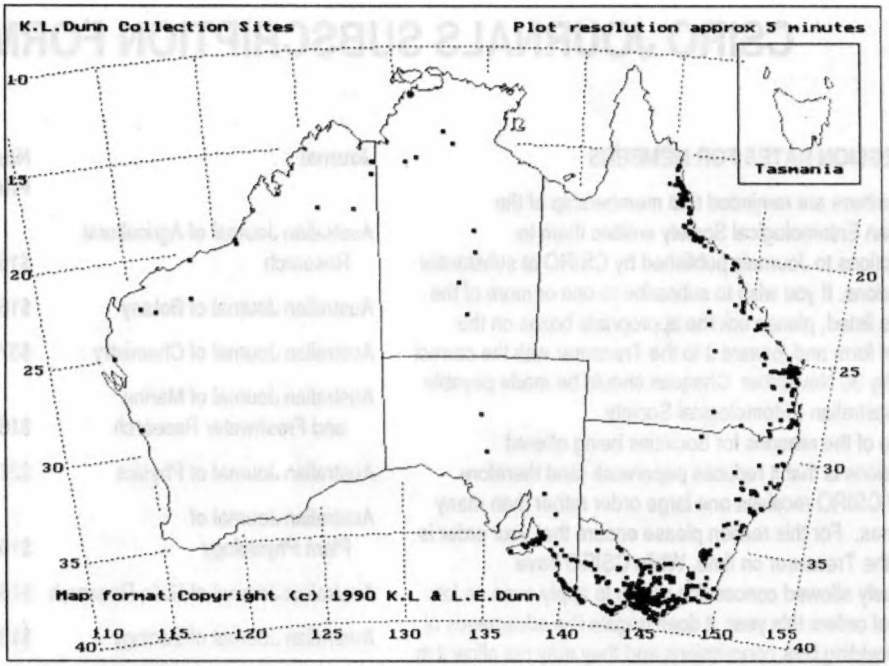
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FIG 1

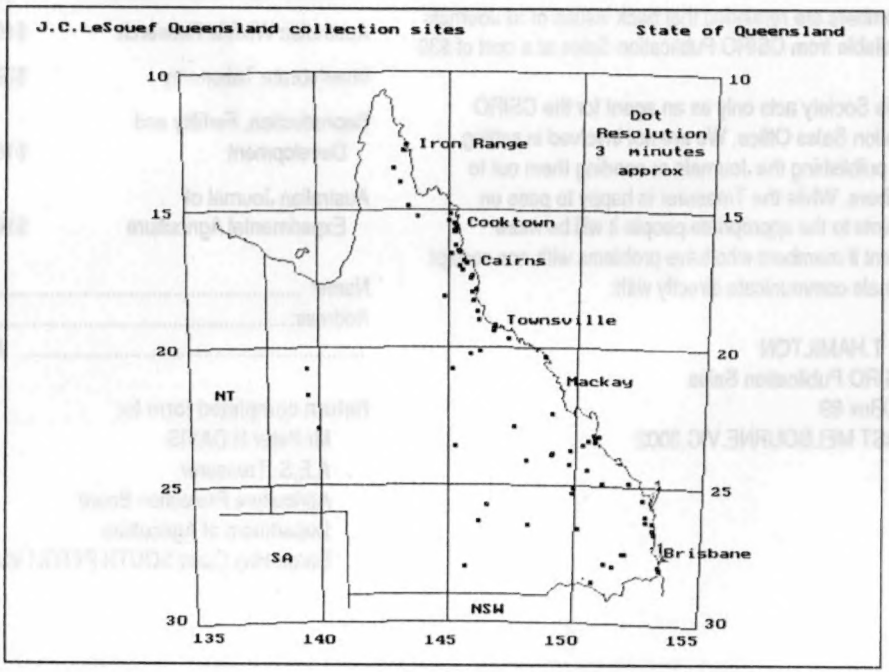
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FIG 2

# ENHANCEMENTS TO THE COMPUTER DATABASE FOR AUSTRALIAN BUTTERFLIES

In the February 1990 edition of *Myrmecia* our database for Australian butterflies was described. We are now developing quality distribution maps. Two prototype samples are presented for illustration purposes, one showing survey sites of KLD (Fig 1), and the other J.C. LeSouef's Queensland collection sites (Fig 2). Other map formats are still under preparation. The maps were displayed on a VGA monitor and subsequently printed on a Hewlett Packard Paintjet Printer.

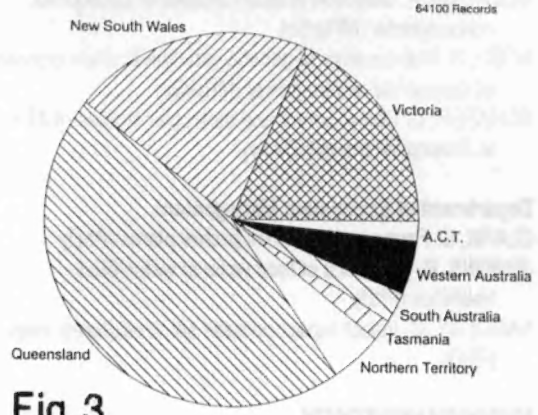
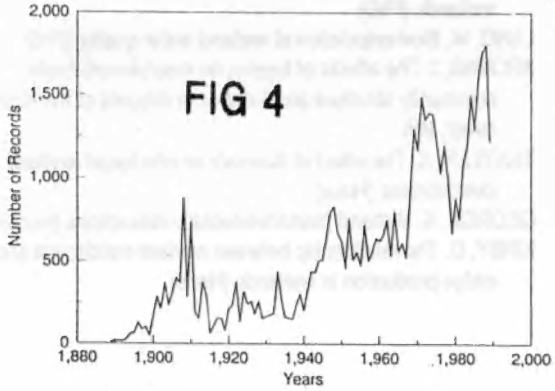



Fig 3

**Data Composition by State / Territory**




**Collection Records per Year 1889 - 1989**

The plot program has facilities to select the size of the "dot" plotted to be one, four or nine pixels. The large dot sizes enhance the clarity of the maps when reproduced. Regardless of the size of the plotted point, the actual plot resolution is approximately five minutes for the Australian map, and three minutes for the Queensland map. As a result adjacent plot points may overlap.

The coastline, state borders, and latitude/longitude references are stored within the plotting program; and the data to be plotted is accessed from a file of appropriate lat/long references, which can be prepared manually using any ASCII wordprocessor, or extracted under program control from the butterfly data base.

It is intended that maps of similar format will be used to present the distribution of each Australian butterfly species in the near future. To enhance the accuracy of this project, butterfly collectors are again encouraged to contribute their records. Since our earlier report, the data base has been increased from 50000 to over 60000 records, however many inland areas and some common species are still inadequately recorded.

The species code has also been enhanced to make the format applicable to other insect groups. It now comprises a six byte code for the main species data, and an additional byte for synonymous names.

An example would be: *Pieris rapae* (Cabbage White) —

| | | | |
|---|---|---|---|
| family | : | 3 | (1 byte representing Pieridae) |
| subfamily | : | 2 | (2 bytes representing Pierinae) |
| genus | : | 60 | (2 bytes representing *Pieris*) |
| species | : | 10 | (2 bytes representing *rapae*) |
| synonym | : | 0 | (provision for 9 alternative names or forms — zero indicating none applicable in Australia) |

The full taxonomic code for *Pieris rapae* is thus 326010 0. The Order has not been defined as the data base is purely of Australian butterflies (all Order Lepidoptera). The derivation of family, sub-family, genus and species names, and the order of listing used are primarily based on Common and Waterhouse 1981 (*Butterflies of Australia*) and also incorporates recent changes in taxonomy

We have found this coding system provides the flexibility for defining any particular classification level, and has ample provision for expansion or revision of currently accepted taxonomy, and a search for any particular grouping can be readily achieved.

**The Database Composition**

At the present time the major collections incorporated are the Australian National Insect Collection, Museum of Victoria and the James Cook University Collection. The composition of the database on a state/territory basis is illustrated in the pie chart (Fig 3).

A sample data search is also presented in the form of a chart showing the data composition on an annual basis over the last century (Fig 4).

K.L. DUNN (1) and L.E. DUNN (2)
(1) 1/7 James Street Dandenong 3175
(2) 16 Grace Avenue Dandenong 3175

## EXTRA ENTOMOLOGY POSTGRADUATE PROJECTS

In the May issue of "Myrmecia" was included the Australia-wide listing of postgraduate thesis projects being undertaken by students in our tertiary institutions compiled by Dinah Hales. A few institutions weren't included and these are now listed:

**UNIVERSITY OF NEW ENGLAND**

**Department of Zoology**

ASANTE, S. Biological and ecological studies of the woolly apple aphid, *Eriosoma lanigerum*, with reference to control. (PhD).

BLANCHE, R. Litter insects associated with broom. (BSc Hons).

COOMBS, M. Flight behaviour of *Heliothis* spp. in relation to the physical environment (PhD).

Gu, H. Flight behaviour of light brown apple moth, *Epiphyas postvittana*, in relation to environmental and genetic factors

HOLDEN, C. Environmental physiology of scorpions (PhD).

NESIC, A. Effects of superphosphate on respiratory behaviour of aquatic insects. (BSc Hons)

SINK, H. Embryonic development of the nervous system of *Drosophila* (PhD).

**Department of Agronomy and Soil Science**

Del SOCORRO, A. Reproductive behaviour of the common armyworm, *Mythimna convecta* (PhD).

FRIEND, J. Improved pest management in pecan nuts (PhD).

SHOHET, D. The role of green vegetable bugs, *Nezara viridula*, and fungal pathogens in the "black nut" syndrome of pecans (BRurScHons).

SPESSA, A. Simulation modelling of *Heliothis* spp in a multi-cropping situation (MRurSc)

**Department of Animal Science**

ARMSTRONG, T. Genetic analysis of olfaction in *Drosophila buzzatii* (PhD).

DEEGENAARS, M. Isolation and molecular characterisation of esterase genes in *Drosophila aldrichi* (BSc Hons)

GROSS, C. Molecular characterisation of a putative esterase triplication in *Drosophila buzzatii* (BSc Hons)

MULADNO, A. Selection in strain crosses of *Drosophila melanogaster* (MRurSc).

NORR, R. Maintenance of genetic variation in strain crosses of *Drosophila melanogaster* (MRurSc)

SCHAFER, D. Development and molecular studies of ADH in *Drosophila buzzatii* (MSc)

**Department of Ecosystem Management**

CLARK, C. Fauna in *Nepenthes* pitcher plants (PhD)

JENKINS, B. Dynamics of food webs in water-filled treeholes (PhD).

NADOLNY, C. Insect impact on seed set in rainforest trees (PhD).

**MURDOCH UNIVERSITY**

**School of Biological and Environmental Sciences**

BALLA, S. Life history strategies of aquatic fauna, nutrient enrichment and water level fluctuations in Perth wetlands (PhD).

LUND, M. Biomanipulation of wetland water quality (PhD).

ARONNS, I. The effects of logging on macroinvertebrate community structure and function in streams of the Karri forest, WA.

TRAYLER, K. The effect of Sumilarv on non-target wetland invertebrates (Hons).

GEORGE, K. Wetland plant/invertebrate interactions (Hons).

KIRBY, D. The relationship between nutrient enrichment and midge production in wetlands (Hons).

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